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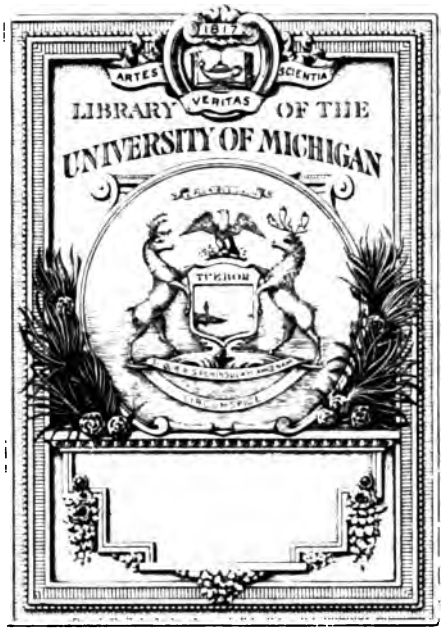
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REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1921

(Publication 2659)

WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

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General

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REPORT

OF THE

SECRETARY OF THE SMITHSONIAN INSTITUTION,

CHARLES D. WALCOTT,

FOR THE YEAR ENDING JUNE 30, 1921.

To the Board of Regents of the Smithsonian Institution.

GENTLEMEN: I have the honor to submit herewith the annual report on the activities and condition of the Smithsonian Institution and its branches during the year ending June 30, 1921. The affairs of the Institution proper are reviewed on the first 18 pages of this report, while more detailed accounts of the year's work of the various branches of the institution are given in the appendices hereto. These include reports on the United States National Museum, the Bureau of American Ethnology, the International Exchange Service, the National Zoological Park, the Astrophysical Observatory, the Smithsonian Library, the United States Regional Bureau of the International Catalogue of Scientific Literature, the National Gallery of Art, the Freer Gallery of Art, and the publications of the Institution and its branches.

THE SMITHSONIAN INSTITUTION.

THE ESTABLISHMENT.

The Smithsonian Institution was created by act of Congress in 1846, according to the terms of the will of James Smithson, of England, who in 1826 bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." In receiving the property and accepting the trust Congress determined that the Federal Government was without authority to administer the trust directly, and therefore constituted an "establishment" whose statutory members are "the President, the Vice President, the Chief Justice, and the heads of the executive departments."

THE BOARD OF REGENTS.

The affairs of the Institution are administered by a Board of Regents whose membership consists of "the Vice President, the

Chief Justice, three Members of the Senate, and three Members of the House of Representatives, together with six other persons other than Members of Congress, two of whom shall be resident in the city of Washington and the other four shall be inhabitants of some State, but no two of them of the same State." One of the Regents is elected chancellor by the board; in the past the selection has fallen on either the Vice President or the Chief Justice; and a suitable person is chosen by them as secretary of the Institution, who is also secretary of the Board of Regents and the executive officer directly in charge of the Institution's activities.

In regard to the personnel of the board, it becomes my sad duty to record the death on May 19, 1921, of its chancellor, Edward Douglass White, Chief Justice of the United States. Resolutions in memory of Chancellor White were adopted by the Regents at a special meeting held May 27, 1921, when the Hon. Calvin Coolidge, Vice President of the United States, was elected chancellor of the Institution.

The only other change in the personnel of the board was the appointment of the Hon. A. Owsley Stanley, Senator from Kentucky, as a Regent on Jaunary 5, 1921, to succeed Senator Charles S. Thomas. The roll of Regents at the close of the fiscal year was as follows: Calvin Coolidge, Vice President of the United States, chancellor; Henry Cabot Lodge, Member of the Senate: A. Owsley Stanley, Member of the Senate; Medill McCormick, Member of the Senate; Lemuel P. Padgett, Member of the House of Representatives; Frank L. Greene, Member of the House of Representatives; John A. Elston, Member of the House of Representatives: Alexander Graham Bell, citizen of Washington, D. C.; George Gray, citizen of Delaware; Charles F. Choate, jr., citizen of Massachusetts; John B. Henderson, citizen of Washington, D. C.; Henry White, citizen of Maryland; and Robert S. Brookings, citizen of Missouri.

The board held its annual meeting on December 9, 1920. The proceedings of that meeting, as well as the annual financial report of the executive committee, have been printed as usual for the use of the Regents, while such important matters acted upon as are of public interest are reviewed under appropriate heads in the present report of the secretary. A detailed statement of disbursements from the Government appropriations under the direction of the Institution for the maintenance of the National Museum, the National Zoological Park, and other branches will be submitted to Congress by the secretary in the usual manner in accordance with the law.

GENERAL CONSIDERATIONS.

The act establishing the Smithsonian Institution in 1846 included in its functions the promotion of art as well as science. Heretofore

this phase of the Institution's activities has remained somewhat in abeyance owing to the lack of means to further it, but within the last few years a tremendous impetus has been given the art feature. At the beginning of the past fiscal year, the National Gallery of Art, formerly administered as a part of the National Museum, became a separate unit under the Smithsonian Institution, and Congress provided a small appropriation for its maintenance. This important step will do much toward the development of Washington as an art center, and will undoubtedly bring much desirable material to the national collections, already valued in money at several million dollars. The Freer Gallery of Art, a unit of the National Gallery, was brought practically to completion during the year, and work is going forward on the installation of the Freer collection. This beautiful building and the unexcelled collection of American and oriental art which it contains are, as noted in previous reports, the gift to the Nation, through the Smithsonian Institution, of the late Mr. Charles L. Freer, of Detroit.

It is an unpleasant duty to here record again the pressing need of the Institution for a larger endowment. Although several generous contributions have been received since the founding of the Institution, few material additions to its endowed funds have ever been made. Despite the greatly enlarged field of its scientific activities, despite the ever-increasing demands for scientific information from individuals throughout the country, its income has remained substantially the same. Almost daily the Institution is forced to forego opportunities for valuable explorations and scientific researches on account of lack of means, and it is hoped that some far-sighted benefactor, recognizing the advantageous position and unexcelled facilities of the Smithsonian Institution for carrying on valuable researches in every branch of science, will provide an endowment sufficient to enable it to carry on this work in the "increase and diffusion of knowledge among men."

Bequests.—As noted in a previous report, an important bequest was made to the Institution under the terms of the will of Mrs. Virginia Purdy Bacon, of New York, probated April 14, 1919, which will do much toward extending our knowledge of the fauna of the world.

That portion of Mrs. Bacon's will relating to the Institution reads as follows:

(f) To Smithsonian Institute the sum of fifty thousand dollars ($50,000), to be used in establishing a traveling scholarship, to be called the Walter Rathbone Bacon scholarship for the study of the fauna of countries other than the United States of America; the incumbents to be designated by said Institute under such regulations as it may from time to time prescribe and to hold such scholarship not less than two years, and while holding such scholarship to conduct for said

Institute investigations in the fauna of other countries under the direction of said Institute.

During the year the Institution received from the executors of Mrs. Bacon's estate securities amounting to $45,000 on account of the total $50,000. At the close of the year sufficient income from this amount had not been received to enable the first scholarship to be established, but it is planned to inaugurate the project during the coming year.

Miss Caroline Henry, daughter of Joseph Henry, first secretary of the Institution, died November 10, 1920. Under the terms of her will the Institution is named as the ultimate beneficiary, the entire estate reverting to it after the death of the last life beneficiary, as a memorial to her father and mother. Miss Henry also bequeathed to the Institution the sum of $1,000 and certain articles of furniture; to the National Museum a set of china presented to Joseph Henry by the first Japanese minister; and to the National Gallery of Art an oil portrait by Kneller.

FINANCES.

The investments of the Institution are as follows:

Deposited in the Treasury of the United States under authority of Congress	$1,000,000

CONSOLIDATED FUND.

These securities are carried at cost and represent the investments made by the Institution, or gifts transferred to the Institution by the donors. The total of this fund now amounts to $157,562.05, namely:

Province of Manitoba 5 per cent gold debentures, due in 1922	$2,000
West Shore Railroad Co. guaranteed 4 per cent first mortgage bonds, due in 2361	42,000
Cleveland Electric Illuminating Co. first mortgage 5 per cent gold bonds, due in 1939	10,000
Atchison, Topeka & Santa Fe Railroad Co. 4 per cent general mortgage bonds, due in 1995, gift	2,000
Chesapeake & Ohio Railroad Co. 5 per cent first consolidated mortgage bonds, due in 1939, gift	2,000
Baltimore & Ohio Railroad Co. 5 per cent refunding general mortgage bonds, due in 1995, gift	5,000
P. Lorillard Co. 7 per cent gold bonds, due in 1944, gift	6,000
Liggitt & Myers Tobacco Co. 7 per cent gold bonds, due in 1944, gift	6,000
City of Youngstown, Ohio, 6 per cent municipal bonds, due in 1928	3,000
Brooklyn Rapid Transit Co. 5 per cent secured gold notes, due in 1918	3,500
Northern Pacific—Great Northern joint convertible 6½ per cent gold bonds, due in 1936	41,500
United States first Liberty loan	200
United States second Liberty loan	100
United States third Liberty loan	10,150

United States fourth Liberty loan	$50
United States Victory loan	6,550
United States war-savings stamps, series of 1918	100
Atchison, Topeka & Santa Fe Railroad Co. 5 per cent preferred stock, gift ---shares--	125
American Smelting & Refining Co. 7 per cent preferred stock, gift--do----	60
Baltimore & Ohio Railroad Co. 4 per cent preferred stock, gift----do----	125

The $3,500 par value of the 5 per cent gold notes of the Brooklyn Rapid Transit Co. are held in the hands of receivers pending reorganization. No plan, however, has yet been adopted.

The sum invested for each specific fund and the manner in which held is described as follows:

Fund.	United States Treasury.	Consolidated fund.	Total.
Smithson fund	$727,640.00	$1,468.74	$729,108.74
Habel fund	500.00	.....	500.00
Hodgkins general fund	116,000.00	37,275.00	153,275.00
Hodgkins specific fund	100,000.00	.....	100,000.00
Rhees fund	590.00	156.00	746.00
Avery fund	14,000.00	18,439.80	32,439.80
Addison T. Reid fund	11,000.00	2,860.00	13,860.00
Lucy T. and George W. Poore fund	26,670.00	6,660.00	33,330.00
George K. Sanford fund	1,100.00	294.00	1,394.00
Chamberlain fund	.....	35,000.00	35,000.00
Bruce Hughes fund	.....	8,741.93	8,741.93
Lucy H. Baird fund	.....	1,166.58	1,166.58
Virginia Purdy Bacon fund	.....	45,000.00	45,000.00
Hamilton fund	2,500.00	500.00	3,000.00
Total	1,000,000.00	157,562.05	1,157,562.05

To Mr. B. H. Swales, honorary custodian, section of birds' eggs, the Institution is indebted for an additional gift of $100 for the purchase of specimens, making a total contribution of $700 since January, 1919.

Some of the unimproved land near Lowell, Mass., has been sold, and the sum of $226.42 was realized therefrom and invested for account of the Lucy T. and George W. Poore fund.

Dr. William L. Abbott has contributed $2,000 during the year to the maintenance of a field party, the purpose of which is to procure archeological and natural history specimens in Australia. This expedition followed those to Borneo and Celebes and has now continued for two and a half years.

The Institution has received for specific activities further valuable contributions from Mr. John A. Roebling, amounting to $15,200.

In partial settlement of the Charles L. Freer bequest the Institution received, in October, 1920, 3,919 shares of the stock of Parke,

Davis & Co. (Inc.), and in March, 1921, 10,000 shares, making a total of 13,919 shares. The dividends are required to be expended in accordance with the terms prescribed by the testator. The total amount received by the Institution from this source since the transfer of these shares was $25,970.75, and the sum of $15,026.01 has been expended.

Current funds not immediately required for expenditure are, when conditions will permit, deposited on time in local trust companies and draw 3 per cent per annum. The interest received in this manner during the fiscal year 1921 amounted to $1,066.67.

The income during the year consisted of interest on permanent investments and other revenues for current expenses, $61,576.32; receipts from bequests and for specific purposes, $110,740.47; which, with cash subject to check on July 1, 1920, amounting to $13,304.34, constituted a total of $185,621.13.

The disbursements described in the annual report of the executive committee were classed as follows: General objects of the Institution, $66,202.39; investments and expenditures for specific purposes, $93,816.33; temporary advances for field expenses, etc., $9,373.07, leaving $5,000 deposited on time and $11,229.34 subject to check.

The Institution was charged by Congress with the disbursement of the following appropriations for the year ending June 30, 1921:

International Exchanges	$50,000
American Ethnology	44,000
International Catalogue of Scientific Literature	7,500
Astrophysical Observatory	13,000
National Museum:	
Furniture and fixtures	20,000
Heating and lighting	74,000
Preservation of collections	312,620
Building repairs	10,000
Books	2,000
Postage	500
National Gallery of Art	15,000
National Zoological Park:	
Maintenance	125,000
Purchase of additional land	80,000
Total	753,620

In addition to the above, there was appropriated for printing and binding $123,123.69 to cover the cost of printing and binding the Smithsonian annual report and reports and miscellaneous printing for the Government branches of the Institution. This includes the usual annual appropriation for printing and binding and the additional amount appropriated by Congress for printing delayed by war work.

RESEARCHES AND EXPLORATIONS.

An important phase of the Institution's work in the "increase and ffusion of knowledge among men" is the scientific exploration of tle-known parts of the earth, as well as the extending of existing owledge concerning better-known regions through field-work. lthough the Institution's funds for this purpose are extremely nited, it is often able to cooperate advantageously with other tablishments in putting expeditions in the field. The results of ese numerous explorations in every quarter of the globe have not nly advanced scientific knowledge, but have greatly enriched the ollections in the United States National Museum in biology, geology, nd anthropology.

A number of the expeditions sent out during the past year are lescribed in the appendices to this report, and others are here re-iewed briefly to indicate the character of the Institution's work in his direction.

GEOLOGICAL EXPLORATIONS IN THE CANADIAN ROCKIES.

Your secretary continued his geological field-work in the Cana-lian Rockies with two main objects in view, (1) the determination f the character and extent of the great interval of nondeposition f sedimentary rock-forming material along the Front Range of he Rocky Mountains west of Calgary, Alberta; (2) the clearing up f the relations of the summit and base of the great Glacier Lake ection of 1919 to the geological formation above and below. Work was begun early in July along the Ghost River northeast of Banff, Alberta.

The solution of the two problems attacked may be briefly described as follows:

The Rocky Mountain front is formed of masses of evenly bedded limestone that have been pushed eastward over the softer rocks of the Cretaceous plains-forming rocks. This overthrust is many miles in extent and occurred long before the Devils Gap, Ghost River Gap, and other openings were cut through the cliffs by running water and rivers of ice. Great headlands and high buttes have been formed by the silent forces of water and frost, many of which stand out against the western sky as seen from the distant foothills and plains.

It was among these cliffs that we found that the first great cliff was of lower Middle Cambrian age, and that resting on its upper surface there were 285 feet (86 meters) of a yellowish weathering magnesian limestone, named the Ghost River formation, which represents the great interval between the Cambrian below and the Devonian above. Sixty miles to the west, over 4 miles in thickness

of limestone, shales and sandstones occur in the break in sedimentation of Ghost River cliffs.

Returning to Bow Valley, the party left the Canadian Pacific Railroad at Lake Louise and went north over Pipestone Pass to the Siffleur River, which is tributary to the Saskatchewan. In the northward facing cliffs, 25 miles (40 kilometers) east of the Glacier Lake section of 1919, and 40 miles (64 kilometers) north of Lake Louise, a geological section was studied that tied in the base of the Glacier Lake section of 1919 with the Middle and Lower Cambrian formations. Returning up the canyon valley of the Siffleur River to the wide upper valley of the Clearwater River, a most perfectly exposed series of limestones, shales, and sandstones of Upper Cambrian and later formations was found, which cleared up the relations of the upper portion of the Glacier Lake section to the Ordovician above.

The work was considerably handicapped by forest fires in July and August and by unusually stormy weather in September.

PALEONTOLOGICAL FIELD-WORK.

Dr. R. S. Bassler, curator of paleontology, National Museum, succeeded during the year in securing for the Museum's collections two much-desired specimens, one a large well-preserved fossil elephant skull formerly exhibited in Cincinnati, the other a highly fossiliferous limestone slab of Silurian age quarried out by him near Oxford, Ohio. Such a slab has long been desired to show the advancement in life from the primitive Cambrian forms, represented in the large Cambrian sea-beach sandstone exhibit, to the higher and more complex species of succeeding geological periods. Notwithstanding the numerous occurrences of fossiliferous limestone of Ordovician and Silurian age, it was not until the past year that a layer affording slabs of suitable size and sufficient perfection of preservation was brought to the attention of the Museum. Numerous large blocks of stone had to be removed before the real task of quarrying the desired slab was begun. The work was successfully accomplished with the generous assistance of Dr. W. H. Shideler, professor of geology at Miami University, Oxford, Ohio, who first located the specimen, and before the close of the year this valuable educational exhibit was installed in the hall of invertebrate paleontology.

At the conclusion of this work Dr. Bassler proceeded to Chicago for the purpose of securing casts of type specimens of fossils in the collections of the Walker Museum, University of Chicago. Regarding this work, Dr. Bassler says:

> The paleontological collection of the National Museum, which includes the celebrated Walcott, Ulrich, Springer, Harris, Nettelroth, and Rominger collections, is especially rich in type specimens of early Paleozoic fossils, but nevertheless the Walker Museum possesses many unique types not represented

ll in Washington. Permission to prepare casts of these and thus advance study series toward the completeness which the National collections should in was generously granted by Dr. Stuart Weller, director of the Walker seum. In two weeks' time I was enabled to finish casting all of the ovician and Silurian types, leaving the remaining Paleozoic species for a ire trip. The work was done quickly by using the modeling compound istocene) to make the mold from which the cast is prepared.

THE SMITHSONIAN AFRICAN EXPEDITION.

The Smithsonian African expedition, in conjunction with the iiversal Film Manufacturing Co., which was described in my last ort, concluded its work shortly after the beginning of the fiscal ar, and somewhat later the collections made by Mr. H. C. Raven, e Institution's representative on the expedition, were received by e National Museum. Among the more important material may be ntioned 697 mammals (including 272 specimens from South rica, a region hitherto very imperfectly represented in the Mu-m's collections; 152 from Lake Tanganyika; and the chimpanzee Uganda), 575 birds, 206 reptiles, and 193 fishes. Although not merically large, these collections are of unusual interest on account the manner in which they supplement those obtained by other peditions to Africa in which the Smithsonian Institution has been erested.

Dr. H. L. Shantz, of the United States Department of Agriculture, o accompanied the expedition with the objects in view of securing e plants of agricultural value for introduction into the United ates, of studying the agricultural methods of both natives and ropeans, and of collecting plants for the National Herbarium of e United States National Museum. Over 1,000 botanical specimens re secured for the Museum, and first-hand observations were made the methods of agriculture pursued by African tribes as well as e Europeans. About 1,600 plants were collected for growth as ricultural plants in this country, the more important being forage ants, nut plants, fruits, and vegetables.

AUSTRALIAN EXPEDITION.

Through the generosity of Dr. W. L. Abbott, Mr. Charles M. Hoy ntinued his work of collecting for the Museum specimens of the ry interesting fauna of Australia. The results of this expedition e of especial value for two reasons: First, the Australian fauna s heretofore been but scantily represented in the Museum, and, cond, the remarkable fauna of that continent is rapidly being ex-rminated through various causes. During the year two shipments re received from Mr. Hoy containing a total of 440 mammals well epared, several of which were hitherto unrepresented in the collec-

tion, together with series of skeletal and embryological material; 570 bird skins, with 24 additional examples in alcohol, and smaller collections of reptiles, amphibians, insects, marine specimens, etc.

MALACOLOGICAL FIELD-WORK IN CALIFORNIA AND THE HAWAIIAN ISLANDS.

On the way to the First Pan-Pacific Scientific Congress, held in Honolulu, August 2 to 20, 1920, Dr. Paul Bartsch, curator of mollusks, United States National Museum, spent one day on shipworm investigation at Mare Island, Calif. A tug was placed at his disposal by the commandant of the station in order to make every minute of the brief visit count, and the investigation resulted in the discovery that the mollusk which caused damage to the extent of some $25,000,000 last year is a new species of Teredo, which Dr. Bartsch named *Teredo beachi*, in honor of the commandant of Mare Island.

In the Hawaiian Islands, collections of mollusks were made at several localities, and dredgings were made in Pearl Harbor, where the commandant placed a dredge at the disposal of Dr. Bartsch and Mr. John B. Henderson. Here also a new species of shipworm was discovered, which was named *Teredo parksi* in honor of Admiral Parks.

An interesting observation made at the southeast point of Hanouma Bay was the finding of an existing marine flora and fauna at a considerable elevation above the level of the sea. Regarding this occurrence, Dr. Bartsch says:

> This flora and fauna consist of algae, quite a number of species of mollusks, crustaceans, echinoderms, and other marine organisms, which occupy pools and puddles kept ever moist and supplied with fresh water by the spray from the breaking surf, which incessantly pounds that shore. I consider this an important observation, since the occurrence of fossiliferous laminæ bearing marine organisms between sheets of lava has been held to indicate that they were deposited at or below sea level, and their occurrence above this has been held as evidence of elevation. We have here an instance which indicates that this is not necessarily the case, for such a lamina would be produced if a new outpouring of lava were to cover up the place mentioned.

BOTANICAL RESEARCHES IN THE ORIENT.

Dr. A. S. Hitchcock, custodian, section of grasses, United States National Museum, left Washington the last of April for several months' botanical work in the Orient under the auspices of the United States Department of Agriculture. This journey was undertaken with two main objects in view: (1) To study the grasses of the Philippine Islands in response to a request from the director of the Philippine Bureau of Science (Dr. E. D. Merrill) to prepare the manuscript on the grasses for a flora of the Philippine Islands; (2) to study the native and cultivated bamboos of the Philippines.

Japan, and China with special reference (1) to their introduction into the United States and (2) to the publication of a revision of the economic bamboos of the world.

Dr. Hitchcock arrived in Manila June 9 and spent 19 days in the islands, mostly in Luzon. He visited Los Baños and from there ascended to the summit of Makiling, 3,300 feet, through virgin forest. He also ascended Baguio, 5,000 feet, and Santo Thomas, 8,000 feet.

At the close of the year he was en route to Japan by way of Hongkong. In Japan he intends to visit Hokone and to ascend Mount Fuji and other mountains, studying and collecting bamboos. From there he will proceed to China, and, if time permits, to Java, returning to Washington the latter part of December.

RESEARCHES ON A MULTIPLE-CHARGE ROCKET FOR REACHING GREAT ALTITUDES.

As mentioned in my last report, Prof. Robert H. Goddard, of Clark University, is working under a grant from the Hodgkins fund of the Institution, on a multiple-charge rocket for exploring the unknown upper layers of the earth's atmosphere. During the year the work has consisted entirely of the construction and test of a small model, illustrating the multiple-charge principle.

The experiments and tests carried on during the year have been specifically for the purpose of eliminating jamming, of improving and simplifying the firing devices, of securing proper protection for the propelling charges, and of overcoming difficulties introduced by changes in the manufacture of materials used.

A parachute device for preventing damage to the rocket and any apparatus or instruments carried has been made which operates for a fall of 60 feet. In addition to this, a modification has been constructed suitable for operating the parachute after a short fall in rarefied air, such as is to be encountered at high elevations.

The intention has been to demonstrate as early as possible a model multiple-charge rocket such as has been mentioned, a successful demonstration of which, it is believed, should show clearly that a larger multiple-charge rocket, constructed upon the same lines, will make possible the reaching of great altitudes.

MEETING IN HONOR OF MADAME CURIE.

A meeting in honor of Madame Curie, the codiscoverer of radium, was held in the auditorium of the National Museum the evening of May 20, 1921, by the Madame Curie Committee of Washington. The address of welcome to Madame Curie was delivered by your secretary, honorary chairman of the committee, who said in part:

In your personality as a child of Poland and a citizen of France you recall to us the inspiration that has come to our national life from those lands and as a scientist the inspiration and courage that you have given to every research student in America. * * * Your discovery of the two elements, polonium and radium, and the determination of their atomic weights and many of their properties, awards you a place in the foremost rank of the world's research workers, while your generous devotion to science and the application of your work to the alleviation of human suffering, asking for yourself only the privilege of continuing your work, place you among the great benefactors of mankind. Moreover, your work has another great underlying value. It has demonstrated to the public at large and to those who control government expenditure for scientific research, the inevitable ultimate benefit to humanity of research in the domain of pure science, however distant it may seem in the beginning from useful application.

The meeting was also addressed by Miss Julia Lathrop, and a lecture on radium was given by Dr. R. A. Millikan, of the University of Chicago.

CINCHONA BOTANICAL STATION.

The lease of the Cinchona Botanical Station held by the Smithsonian Institution on behalf of several American botanical agencies, mentioned in previous reports, was terminated on June 30, 1921, as the colonial Government of Jamaica decided to retain the station for the use of British and Jamaican botanists. It is hoped that the Institute for Research in Tropical America, recently organized in this country, will soon be able to provide some station affording advantages similar to those of the Cinchona station for botanical research in the Tropics.

PUBLICATIONS.

There were issued during the year by the Smithsonian Institution and its branches 113 volumes and pamphlets. Of these publications there were distributed a total of 142,208 copies, including 255 volumes and separates of the Smithsonian Contributions to Knowledge, 12,922 volumes and separates of the Smithsonian Miscellaneous Collections, 24,423 volumes and separates of the Smithsonian annual reports, 89,000 volumes and separates of the publications of the National Museum, 12,795 publications of the Bureau of American Ethnology, 2,000 special publications, 14 volumes of the Annals of the Astrophysical Observatory, 40 reports on the Harriman Alaska expedition, 414 reports of the American Historical Association, and 345 publications presented to but not issued by the Smithsonian Institution.

The publications of the Institution and its branches are the principal means of carrying out one of its chief purposes, the "diffusion of knowledge." They cover practically every branch of science and are distributed to libraries, educational and scientific establishments, and interested individuals throughout the world. The annual report

of the Institution contains a general appendix made up of articles reviewing in a semipopular style recent advances and interesting developments in all branches of science. These reports are printed in large editions, and the increasing demand for them indicates that there is a growing interest in scientific matters among the American people. The publications of the National Museum and the Bureau of American Ethnology are described in detail in the appendices devoted to those branches of the Institution.

Seven papers of the Smithsonian Miscellaneous Collections were issued during the year, among which may be mentioned as of special interest a seventh revised edition of the Smithsonian Physical Tables, a comprehensive work for which there is great demand among industrial concerns, engineers, and educational institutions; the annual Smithsonian Exploration Pamphlet, which describes briefly the results of the Institution's explorations and field-work during the year and is profusely illustrated with interesting photographs taken by the explorers in various parts of the world; and a reprint of the Smithsonian Mathematical Tables, one of the Institution's series of tables which includes the Physical Tables mentioned above, the Meteorological Tables, and the Geographical Tables.

Allotments for printing.—The congressional allotments for the printing of the Smithsonian reports and the various publications of the branches of the Institution were practically used up at the close of the year. The allotments for the coming year ending June 30, 1922, are as follows:

For the Smithsonian Institution: For printing and binding the annual reports of the Board of Regents, with general appendices, the editions of which shall not exceed 10,000 copies, to be immediately available	$20,000
For the annual reports of the National Museum, with general appendices, and for printing labels and blanks, and for the bulletins and proceedings of the National Museum, the editions of which shall not exceed 4,000 copies, and binding in half morocco or material not more expensive, scientific books and pamphlets presented to or acquired by the National Museum Library	37,500
For the annual reports and bulletins of the Bureau of American Ethnology, and for miscellaneous printing and binding for the bureau	21,000
For the annual report of the National Gallery of Art and for printing catalogues, labels, and blanks	1,000
For miscellaneous printing and binding:	
International Exchanges	200
International Catalogue of Scientific Literature	100
National Zoological Park	200
Astrophysical Observatory	4,000
For the annual report of the American Historical Association	7,000

Committee on printing and publication.—The function of the Smithsonian advisory committee on printing and publication is to

examine and make recommendations concerning all manuscripts offered for publication by the Institution or its branches. During the year eight meetings were held and 94 manuscripts were acted upon. The membership of the committee is as follows: Dr. Leonhard Stejneger, head curator of biology, National Museum, chairman; Dr. George P. Merrill, head curator of geology, National Museum; Dr. J. Walter Fewkes, chief, Bureau of American Ethnology; Mr. N. Hollister, superintendent, National Zoological Park; and Mr. W. P. True, editor of the Smithsonian Institution, secretary.

LIBRARY.

Accessions to the library of the Institution during the year numbered 11,948 volumes and pamphlets, of which 6,250 went to the Smithsonian deposit in the Library of Congress; 938 to the Smithsonian office, Astrophysical Observatory, Freer Gallery of Art, and National Zoological Park libraries; and 4,760 to the National Museum library. Many of the packages of books and pamphlets received by the library through the International Exchange service consisted of publications issued by several foreign countries during the years 1914 to 1920 which had been held awaiting normal transportation facilities. This unusual number of receipts necessitated more than twice the amount of cataloguing accomplished by the library staff during the previous year.

Among the many valuable accessions to the scientific library of the National Museum may be mentioned the entire geological library of the late Dr. Joseph P. Iddings, which forms the most important acquisition to the geological section of the library since the foundation of the department in 1880.

Two new branch libraries were created during the year, namely, the National Gallery of Art library and the Freer Gallery of Art library. The former is administered by the National Museum library, but the latter is a distinct unit consisting of publications needed for reference use in connection with the Freer art collections.

NATIONAL MUSEUM.

The past year was an unusually busy one for the National Museum. The National Gallery of Art was separated from the Museum and created a separate administrative unit under the Smithsonian Institution; the Aircraft Building was opened to the public; and considerable additional work was entailed by the schemes for reclassification and reorganization of the Government departments, the putting into effect of the retirement system for civil employees, and the impending inauguration of the budget system for Government accounts.

Other changes in the organization of the Museum besides the separation of the National Gallery of Art include the removal of the division of graphic arts from the department of anthropology to the department of arts and industries; the creation of the division of history, formerly under anthropology, as an independent division; the subdivision of the division of marine invertebrates; and the grouping of all strictly engineering units, including mineral and mechanical technology, under one curator. The Museum, as now organized, comprises an administrative office, 4 scientific and technical departments, and 1 independent division, with a total of 49 recognized subdivisions.

The total number of specimens acquired by the Museum during the year was 338,120. This new material is described somewhat in detail in the report of the administrative assistant in charge, appended hereto, so that it is necessary to mention here only a few of the most interesting accessions. In anthropology, a collection of rare Mission Indian baskets was received from Miss Ella F. Hubby, and Dr. W. L. Abbott contributed some very interesting stone fetishes and ancient pottery from Santo Domingo. An immense collection of skeletal material was received from the College of Physicians and Surgeons, New York City, which will double the value of the collections in the division of physical anthropology.

The most notable accession to the department of biology was the material collected in Australia by Mr. Charles M. Hoy through the generosity of Dr. W. L. Abbott. A great collection of Japanese mollusks was donated by Mr. Y. Hirase, of Japan, forming one of the most valuable accessions ever received by the division of mollusks. The geological accessions included a quantity of South American material comprising Bolivian tin and tungsten ores, rare copper minerals from Chile, and a representative series of ores from Argentina. An interesting exhibit of precious opal in the matrix, ranging in color from the "black" opal to the pale opalescent tints, was presented by the Rainbow Mining Co., of Nevada. An extensive series of igneous rocks from islands of the Pacific and Indian Oceans, collected by the late Dr. Joseph P. Iddings, was presented by his sister, Mrs. Francis D. Cleveland.

The division of textiles received specimens of the fabrics used in the construction of airplanes for military use, and many beautiful specimens of silks, fur fabrics, plushes, and velvets contributed by American manufacturers to show the progress of textile industries in this country. The division of medicine acquired, among other valuable material a series of the most frequently prescribed pharmaceutical preparations, arranged, according to their therapeutic action, into 26 groups. The collection of aeronautical material in the division of mechanical technology was enriched by the acquisition of the original hydroplane model devised by Mr. Edson F. Gallaudet.

This model was constructed and experimented with in 1898, and is particularly interesting in that means for lateral control and wing warping were incorporated, but in practice were unsuccessful.

The Herbert Ward collection of African ethnologica was shipped from Paris on June 25, 1921, but was not received at the Museum until after the close of the fiscal year. This rare and valuable material includes 19 pieces of sculpture by Mr. Ward and about 2,600 specimens of the arms and implements of the Africans of the Congo.

The usual large number of meetings and congresses were held in the auditorium of the Museum. Visitors to the Natural History Building during the year totaled 364,281 for week days and 103,018 for Sundays, and to the Arts and Industries Building 286,397. The publications issued during the year comprised the annual report, 8 bulletins, and 60 separate papers including 4 parts of bulletins, 5 parts of the Contributions from the National Herbarium, and 51 proceedings papers.

NATIONAL GALLERY OF ART.

An event of great importance in the development of Washington as an art center was the organization, at the beginning of the year, of the National Gallery of Art, previously a dependency of the United States National Museum, as a separate administrative unit under the Smithsonian Institution. This step, which was made possible through an appropriation contained in the sundry civil bill for the year 1921, will enable the institution to carry out the provisions of the act of establishment in which art was placed on an equal footing with science in the proposed development of the institution. The art feature has heretofore been held in abeyance through lack of funds and of proper means for administering the National Gallery. All that is now necessary for the full development of the Nation's art collections is a suitable building to house the treasures at present on hand and contributions that may confidently be expected in the future.

The first real impetus to the growth of the gallery was the bequest of a valuable collection of art works by Harriet Lane Johnston in 1906. Since that time the national collections have increased rapidly, chiefly through gifts and bequests of art works by patriotic citizens, until now the value of the material already assembled is estimated at several million dollars. The gallery has never had any funds for the purchase of pictures until recently, when a liberal private fund has become available. The will of the late Henry Ward Ranger provides that the interest of the sum of $200,000 shall be used for the purchase of works of art which may ultimately come to the National Gallery. A number of valuable paintings have already been purchased from this fund.

Two other agencies which will do much toward building up the National Gallery are the National Portrait Committee, which secured for the gallery the portraits of many of the distinguished leaders of America and the Allies in the World War, and the National Gallery of Art Commission, whose functions are "to promote the administration, development, and utilization of the National Gallery of Art, including the acquisition of material of high quality representing the fine arts and the study of the best methods of exhibiting material to the public and its utilization for instruction."

An illustrated catalogue of the present collection was in preparation and nearly ready for the press at the close of the year. A start was made, also, during the year toward the building up of an art library. The income from a bequest to the Smithsonian Institution by the Rev. Bruce Hughes, of Lebanon, Pa., will be used for the purchase of reference works on art which will serve as a permanent memorial to the donor.

FREER GALLERY OF ART.

In the first report on the Freer Gallery of Art (Appendix 3 of this report), the curator, Mr. J. E. Lodge, gives a list indicating the nature and number of objects in the Freer collection, all of which had been received at the Freer Building by November, 1920. Art works of various kinds from the following sources are included in the collection: American, Babylonian, Byzantine, Cambodian, Chinese, Cypriote, Egyptian, Greek, Italian, Japanese, Korean, Near Eastern and East Indian, Palmyran, and Tibetan. The total number of art objects, including a small amount of unclassified material, is 9,566.

During the past year, the collection was unpacked and the objects placed in their respective storage spaces. The Japanese pottery and Chinese paintings were classified, and the task of checking and cataloguing the entire collection was begun. The interior fittings of the building were completed during the year, with the exception of a few minor items, and in June the Institution formally accepted the building from the architect, Mr. Charles A. Platt.

The plan of installation is first to catalogue and arrange the collections in the storage rooms so that they will be accessible for study, then to select objects for exhibition, and finally to arrange the public exhibits. This method delays the opening of the building to the public, but in the long run of years it will make the collection more valuable for purposes of study and exhibition, and will assure a far more accurate record of every object. Such an art gallery as this will exert its influence for centuries, and a year of delay in the beginning will not materially decrease its usefulness.

BUREAU OF AMERICAN ETHNOLOGY.

The Chief of the Bureau of American Ethnology calls attention to the desirability of increasing the membership of the staff in order to meet the requirements of modern ethnological research. The service that the bureau should render to the state is somewhat different from what it was when the bureau was organized by Maj. Powell, its director. American ethnology of the future, having passed its descriptive stage, will demand a synthetic comparative treatment of the vast mass of facts accumulated in the last 25 years. There is an urgent call for generalizations that will be immediately useful to the community; and as there is an ever-growing interest in the history of the Indians, the future of this science lies along the line of the historical development and appreciation of prehistoric culture.

Nature has made the Rocky Mountains a vacation ground for the people of this country who love mountain scenery, and parks and monuments containing natural attractions are being set aside by presidential proclamation and placed under the direction of the Department of the Interior. One line of usefulness that ethnology can follow is to turn the minds of our people to the educational value of this area.

The aim of the chief during the year has been to cover as fully as possible with the funds available the comprehensive field of the ethnology and archeology of the American Indian. This plan embraces the many aspects of the cultural life of the Indians, their languages, dwellings, social and religious customs, music, mythology, and ritual. In many cases it is urgent that this valuable material be recorded immediately, as certain of the tribes are rapidly approaching extinction. It is the purpose of the chief to increase as much as possible the field-work of the bureau, especially in the branch of archeology, which is becoming more and more popular as shown by the increasing demand for publications on this subject. Researches were carried on during the year on the Algonquian Indians, the Iroquois, various members of the Muskhogean stock, Kiowa, Pueblo, Osage, Pawnee, and others. Archeological explorations were conducted in Texas, Missouri, Tennessee, Kentucky, Colorado, New Mexico, and the Hawaiian Islands.

Successful archeological field-work was accomplished by Dr. J. Walter Fewkes on the Mesa Verde National Park, Colo. An extremely interesting ruin on which work was begun during the previous year was completely excavated and repaired. Owing to its undoubted use in connection with the worship of fire by the Indians, it was named Fire Temple. In Tennessee a number of prehistoric mounds were excavated which yielded interesting and valuable data

on the Indians of that region, and similar work was conducted in Texas under the auspices of the bureau. Researches on Indian music were continued by Miss Densmore, the music of the Papago being studied this year.

INTERNATIONAL EXCHANGES.

The work of the exchange service was greatly increased during the past year owing to the resumption of exchange relations with Germany. The total number of packages of publications handled during the year was 451,471, an increase of 82,099 over the total for the preceding year. The weight of this material was 605,312 pounds, an increase of 108,934 pounds.

During the year exchanges of publications were inaugurated with the Czechoslovak Republic and with the Polish Government. Exchange relations will be established with Roumania and Jugoslavia as soon as transportation and other facilities are sufficiently stabilized.

To the list of countries receiving full sets of United States Government documents there was added the Government of Poland, making a total of 57 foreign depositories, while to the list receiving partial sets were added Latvia and the Library of the League of Nations at Geneva, bringing the total number of partial sets up to 39.

As an example of the value of the exchange service in securing special series of publications in this country for establishments abroad, a set of publications which would tend to make the United States better known in Belgium was obtained from the various Government bureaus in this country and forwarded to the Société Belge d'Etudes et d'Expansion, at Liege, at their request.

NATIONAL ZOOLOGICAL PARK.

That the National Zoological Park is becoming more and more valuable to the people of Washington and out-of-town visitors from all parts of the country as a source of recreation and natural history instruction is evident from the fact that the record of attendance has again been broken during the past year. The previous year's visitors numbered 2,229,605, which figure was this year exceeded by 171,232, making a total of 2,400,837. One hundred and twenty-four schools and classes, numbering 13,629 individuals, visited the park during the year for instruction purposes. The number of animals exhibited to the public is greater than any time since 1912, while the number of species represented in the collection is greater than ever before. The scientific importance and monetary value of the collection also are much greater than in any previous year. Gifts of animals during the year numbered 178, including many rare and valuable specimens. Mr. Isaac Ellison, of Singapore, presented the park with

a male orang-utan, the first of these interesting animals to be shown for many years. Mr. Victor J. Evans, of Washington, continued his previous generosity to the park by presenting a young Kadiak bear, a pair of birds of paradise, a species never before shown here, and some valuable parrots. A full list of the animals presented and their donors is given in the full report on the park, Appendix 6. Many valuable specimens were also secured by exchange and transfer, and a few by purchase. The total number of animals in the collection on June 30, 1921, was 1,545, representing 478 species, an increase over the year before of 118 individuals and 59 species.

Owing to a drop toward the end of the year in the cost of food for the animals, it was possible to undertake a few much-needed and long-deferred improvements. Sections of roads were rebuilt and repaired, one of the fords across Rock Creek was rebuilt with cement, a sidewalk was laid from the much-used Harvard Street entrance, the great flight cage for birds was scraped and painted, and several minor improvements were completed. With the aid of a small sawmill, 140,000 feet of lumber and 80,000 shingles were salvaged from dead chestnut trees in the park.

The purchase of land necessary for the protection of the Connecticut Avenue entrance, mentioned in several previous reports, was completed during the year, and a small unexpended balance of the money available for this purpose was reappropriated for the purchase of certain much-needed lots near the Adams Mills Road entrance.

The most urgent needs of the park are a suitable public restaurant building, a building for the exhibition of small mammals, and funds for the completion of grading and filling operations, which would provide a large area of flat space for deer and other animals, and would make possible the elimination of a dangerous curve in the main automobile road.

ASTROPHYSICAL OBSERVATORY.

The most important event during the year was the location of a new solar observing station on Mount Harqua Hala, Ariz., probably the most cloudless region in the United States. This station, which was erected through the generosity of Mr. John A. Roebling, of New Jersey, will be used for the purpose of securing solar-constant observations on all possible days for several years, which it is hoped will furnish, in conjunction with similar observations to be made at the Smithsonian station at Montezuma, Chile, a sound basis for the study of the relation between solar variation and our weather conditions on the earth.

At Washington the preparation of Volume IV of the Annals of the Astrophysical Observatory, mentioned in last year's report,

s brought nearly to completion. A large amount of delicate trument work was carried out at the observatory instrument ›p, and Dr. Abbot was invited by Dr. Hale, of the Mount Wilson lar Observatory, to prepare a special spectrobolometer to observe energy spectra of the stars. This extremely delicate apparatus s nearly completed at the close of the year.

n the field the usual solar observations were conducted at Mount lson, Calif.; Montezuma, Chile; and at the new station in Ari- ıa. At Mount Wilson Dr. Abbot and Mr. Aldrich also carried observations on the distribution of radiation over the sun's k, and various investigations with the pyrheliometer, the spectro- ometer, the pyranometer, and the Ångström pyrgeometer. The ar cooker, on which Dr. Abbot has been working for several sons, was brought to perfection, and practically all the cooking ɛrations required by the observers were performed with the paratus.

At the new Arizona station observing was begun about the middle September, and from then until February conditions were even tter than had been hoped for. It was possible to make observa- ›ns on about 70 per cent of the days during that period. March, ›ril, and May were less satisfactory, but this was apparently due the unusual character of the weather all over the world, and it is nfidently hoped that continued observations of the sun here and the Chile station will lead to important results bearing on weather ɛdiction on the earth.

TERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

This international cooperative enterprise has been in existence ce 1900, having as its object the systematic indexing and classify- of all original scientific publications. Beginning with the litera- e of 1901, the catalogue has been completed through 1914, and re is now on hand much material from that date up to the present ıe.

Until the beginning of the late war the catalogue was practically f-supporting, but owing to the international chaos caused by the r the finances of the enterprise are now in a very precarious ıdition. For this reason the Royal Society of London, the finan- l sponsor of the catalogue, called a conference which was held London during September, 1920. At this conference delegates re sent from 13 of the principal countries of the world, exclusive the enemy countries, who were not included in the Royal Society's vitation. The United States was represented by delegates from e National Academy of Sciences, the National Research Council,

the Smithsonian Institution, and by a representative from the Rockefeller Foundation, who had just returned from the Continent, where he had been making an investigation of the Concilium Bibliographicum of Zurich.

The consensus of opinion resulting from this meeting appeared to be that it was essential for all organizations, such as the International Catalogue and existing and proposed abstract journals, whose common aim is to supply information required by scientific workers and libraries, to cooperate for their mutual benefit, and that when some definite plan of consolidation was agreed on financial aid would be forthcoming. Plans looking to this most desirable condition are now under way, but it appears that for the present, at least, the necessary funds will have to be supplied from the United States, for although we have felt the burden of war expenses in this country our finances are not in the deplorable condition now common to all of the European countries, which, in addition to the havoc caused by the war, are at a very great additional disadvantage owing to the unprecedented condition of monetary exchange. There is no question as to the need of abstract journals for the immediate use of scientific workers and also of a catalogue and index as a permanent record of scientific literature for the use of libraries, as well as for scientific workers, and as the present organization of the International Catalogue has still the official support of all of the principal countries of the world, and as this organization was founded after years of endeavor by representatives of practically all of the scientific societies of the world, it would now be a calamity to allow it to lapse merely on account of temporary financial difficulties. I can not therefore too strongly urge that this assistance be furnished by some of the several wealthy organizations in this country whose aims are to further the interests of science. A more detailed account of the findings of the conference and of the present condition of the catalogue will be found in the regular annual report of the United States Regional Bureau of the International Catalogue of Scientific Literature, appended hereto.

NECROLOGY.

EDWARD DOUGLASS WHITE.

Edward Douglass White, Chief Justice of the United States and chancellor of the Smithsonian Institution, died May 19, 1921. It is not necessary to here review the life of this distinguished American whose name has been for so many years before the public. At a special meeting of the Board of Regents held May 27, 1921, the following resolutions in memory of Chancellor White were adopted:

Whereas the Board of Regents of the Smithsonian Institution having received the announcement of the death on May 19, 1921, of the Hon. Ed-

ward Douglass White, Chief Justice of the United States, Regent of the Smithsonian Institution for ten years, eight years of which he presided as chancellor:

Resolved, That the board here expresses profound sorrow at the passing away of their beloved colleague, who, as a statesman, jurist, and chancellor, brought always to his work that remarkable ability and high conception of duty that made him so strong an influence for good.

Resolved, That this minute be made a part of the records of the board, and that a copy of these resolutions be transmitted to the family of the late chancellor as an expression of the sympathy of the Regents at the irreparable loss sustained in the death of this distinguished public servant and citizen.

NELSON R. WOOD.

Nelson R. Wood, for over 32 years a taxidermist in the National Museum, died on November 8, 1920. Mr. Wood was one of the best men in the country in his line of work, and his loss is keenly felt by the Museum.

WILLIAM PALMER.

William Palmer, taxidermist in the National Museum, died on April 8, 1921, after 30 years' faithful work in that capacity. Mr. Rathbun, late assistant secretary of the Institution, said of him:

Mr. Palmer has been one of the best all-round taxidermists and preparators in the Museum service. He is not only efficient and a hard worker, but is especially valuable because of his diversified talents, which permit of his being utilized in practically all zoological subjects.

JOSEPH P. IDDINGS.

Dr. Joseph P. Iddings, associate in petrology, department of geology, United States National Museum, died September 15, 1920. Dr. Iddings was one of the leading petrologists of America, indeed of the world. He was for many years connected with the United States Geological Survey, and for a time professor of petrology in the University of Chicago. He was the author of two privately printed volumes on Rock Minerals and Igneous Rocks, and numerous papers in the Government reports. He was also a joint author of the Quantitative System of Rock Classification. The important collections made and studied by him are all in the custody of the National Museum.

Respectfully submitted.

CHARLES D. WALCOTT, *Secretary.*

APPENDIX 1.

REPORT ON THE UNITED STATES NATIONAL MUSEUM.

SIR: I have the honor to submit the following report on the operations of the United States National Museum for the fiscal year ending June 30, 1921:

The fiscal year was an unusually busy one. The separation of the National Gallery of Art from the Museum, the completion of the building for the Freer collections, the opening of the Aircraft Building, the preparation of data for the schemes of reclassification of Government employees and reorganization of Government departments, the inauguration of the retirement system for civil employees, and the impending inauguration of a budget system for Government accounts, all added to the usual Museum activities of the year.

The National Gallery of Art, which had for a number of years been administered as the fine arts department of the museum, became an independent bureau under the Smithsonian Institution on July 1, 1920, through provision for its separate maintenance in the sundry civil appropriation act for the year 1921. To the new bureau were transferred such of the Museum's collections as had been in the custody of the curator of the National Gallery of Art, consisting of paintings, sculptures, and a few miscellaneous pieces. For the present the gallery continues to be housed in the Natural History Building of the Museum.

Dr. William H. Holmes severed his connection with the Museum as head curator of anthropology on July 1, 1920, to become director of the National Gallery of Art, and carries with him to his larger field the good will of the entire Museum staff. When, in 1906, it became necessary to provide a somewhat definite organization for the department of fine arts of the Museum, the curatorship of the National Gallery of Art was tendered to Mr. Holmes and accepted by him in addition to his duties then as Chief of the Bureau of American Ethnology. Since that time Dr. Holmes has given freely of his time and strength for the National Gallery without financial return. It is gratifying that he is now enabled to devote all of his energies to his chosen field.

As a separate administrative unit of the Institution a rapid growth is predicted for the National Gallery, of which the Freer collection, housed in its own building, forms a distinct unit. It is hoped that in a few years an additional building, suitable for the permanent home of the National Gallery, will be authorized by Congress.

Dr. Walter Hough, curator of ethnology, was made acting head curator of the department of anthropology upon Dr. Holmes's resignation.

On April 31, 1921, the final work in the construction of the building for the Freer collections was completed, and the structure was formally transferred to the Smithsonian Institution, being accepted on May 3, 1921, just four years and seven months after ground was broken for its erection. That results were not reached earlier, as was anticipated at the beginning, was largely due to unforeseen delays incident to the war, but the work was at all times conducted with that deliberation and attention to details necessary to stability and permanency of structure—and these, it is believed, have been obtained. Planned with special reference to accommodating a collection whose various units were known, and of affording unusual facilities for study and research, the building is an object of art in itself, and is bound to become a mecca for art lovers from all over the world. Under the officer in charge of public buildings and grounds driveways and walks were constructed leading to the Freer Gallery, and the land immediately surrounding it was seeded and has now been brought up to the standard of the balance of the Smithsonian Reservation. During the summer and autumn of 1920 the remaining portions of the Freer collections were brought to Washington from Detroit and stored in the building. The work of unpacking and installing the specimens was begun in the late autumn under the able direction of Miss Katharine N. Rhoades, who had been associated with Mr. Freer in their care for several years. It is anticipated that some time must elapse before the exhibits are all in readiness and the halls can be opened to visitors, as there is a great amount of critical study necessary before the objects can be accurately labeled and classified.

In December, 1920, Mr. John E. Lodge, curator of the department of Chinese and Japanese art in the Boston Museum of Fine Arts, was appointed curator of the Freer Gallery and placed in charge. The Freer Gallery is being administered as an independent unit of the National Gallery of Art, but the heating, lighting, and guarding of the building continue to be carried on in connection with the National Museum system, since the Freer Gallery is dependent upon the Museum plant for heat, light, and power.

By the opening to the public of the Aircraft Building, on October 7, 1920, the Museum added about 14,000 square feet of floor space to its exhibition halls. This metal structure, erected by the War Department on the Smithsonian Reservation in 1917 for the use of the United States Signal Service, was transferred to the custody of the Smithsonian after the close of the war. In it has been assembled

a collection of aircraft and accessories in production during th period.

Changes during the year in the organization of the Museum, from the separation of the National Gallery of Art, included t moval of two divisions from the department of anthropology a beginning of the year—the division of graphic arts being t ferred to the department of arts and industries and the divisi history becoming an independent division reporting directly t administrative assistant in charge of the Museum. In biolog division of marine invertebrates was subdivided on Februa 1921, the collections of mollusks being segregated by the reesta ment of the division of mollusks. In the department of arts a dustries a combination of all the strictly engineering unit effected in May, 1921, by the appointment of the curator of me cal technology, Mr. Carl W. Mitman, as curator also of mi technology. He will be aided by an assistant curator in ea vision.

The Museum lost by death during the year Dr. J. P. Iddings, ciate in petrology, Messrs. Nelson R. Wood and William P taxidermists, and Mr. T. W. Reese, watchman.

As at present organized, the Museum comprises, besides an a istrative office, 4 scientific and technical departments, and 1 inde ent division, with a total of 49 recognized subdivisions. The tific staff of the Museum comprises 94 persons, of whom less half receive pay from the Museum. This by no means repre however, all the scientific workers on the collections, for the M also has much regular assistance from employees of various g mental agencies in Washington in classifying, arranging, and ing on exhibition specimens in their respective fields of investig

As the museum organization of the Government, the Nationa seum has important assistance from the executive department other governmental agencies. Particularly was this true durin fiscal year 1921. Credit is due to the Navy Department for t porting and installing in the Museum building many attracti hibits in the World War collections; to the War Departmen similar service, including the detail to the Museum of one offic several months; to the Departments of Agriculture, Commerce the Interior and the Bureau of American Ethnology for many able contributions of specimens and much assistance in classi and labeling objects in the Museum; to the Interior Departmen for transferring exhibition cases no longer needed by it; and t Post Office Department for large series of valuable and inter postage stamps.

This cooperation is mutual, as the Museum renders aid to governmental establishments whenever possible, as evidence

the work of Dr. Aleš Hrdlička for the Department of Justice, by which over a million of dollars in land and money was saved for the Indians.

The maintenance and operations of the National Museum for the fiscal year 1921 were provided for by items appropriated in the sundry civil and in two deficiency bills, amounting in all to $483,322.70.

The item for preservation of collections, from which are paid the administrative, scientific, preparatorial and clerical staff, the watch, labor and cleaning force, and the cost of all preservatives, has remained at $300,000 from 1911 until the present time. An additional $12,620 granted for this year meant the extension of the service to cover the Freer Gallery of Art, for which it provided watchmen, cleaners, and clerical help and the necessary miscellaneous supplies needed in connection therewith. It afforded no cessation of the strictest economy by means of which only is it possible to continue the operations of the Museum. Present conditions can perhaps best be realized when it is stated that 10 years ago the item of $300,000 was considered insufficient to cover the needs of the Museum in these lines. Within this decade, with its tremendous decrease in the purchasing power of the dollar, some 3,000,000 specimens have been added to the collections, the scope of the Museum has been materially enlarged, and an additional building has been added to the Museum group, aside from the Freer Gallery.

During this period, however, increases have been granted in the items for heating and lighting and for printing and binding, owing to the increased cost of coal and the tremendous increase in the cost of labor, paper, and other materials used in printing. On the other hand, even with the greatly extended service, the item for building repairs is now $5,000 less than it was 10 years ago, at a time when the Natural History Building was new and naturally required comparatively little in the way of repairs. The amount for furniture and fixtures is likewise $5,000 less than it was for a number of years prior to the war, when prices of labor and material were from 50 to 75 per cent lower.

Of the $64,202.70 appropriated this year for printing, $37,500 was the regular item and $26,702.70 a deficiency item to permit of the completion during the year of an unusual accumulation of work at the Government Printing Office. The Museum printing had for several years been held back for lack of sufficient available funds.

A comparison of the operating expenses of the United States National Museum with museums of similar size and scope in this country and abroad is extremely interesting, and brings out very strongly the inadequacy of the appropriations, especially with reference to the salaries paid to all classes of its employees. The scientific staff is

paid from 40 to 50 per cent less than scientific men of the same grade in similar museums elsewhere.

The upkeep of the buildings during the year involved the usual repair work, including the painting of walls and ceilings in several halls, the painting of all the exterior window frames of the Natural History Building, those of the east end of the Smithsonian Building, and a beginning on those of the Arts and Industries Building; and the painting of the roofs of the latter. A locker room for the engineer force was constructed at the east entrance, ground floor, of the Natural History Building, and the east court of that building was seeded with grass.

When the Freer Building was being planned, arrangements were made to procure heat, light, and power from the central heating plant, which the Institution was assured would be in a position to furnish the same before needed. In the absence of such service, however, the Freer Gallery was connected with the Museum power plant, from which was furnished this year the necessary heat, light, and power. This additional load on the Museum plant required the use of the old boilers in the Arts and Industries Building during the coldest portion of the heating season. By the removal of the old flat grates for burning anthracite coal in these boilers and the installation of hand-operated stokers, bituminous coal could be used without the production of unlawful smoke. The antiquated blow-off valve combination on the boilers in the Natural History Building was also replaced. Though the winter was a comparatively mild one, heat was supplied the buildings from October 6, 1920, to May 20, 1921, with a consumption of 3,224 tons of coal. The ice plant, in operation for 4,017 hours, produced 324.7 tons of ice. As a matter of economy the power plant was shut down as usual during July and August, 1920, and was again closed on June 4, 1921, the electric current being purchased from a private concern during the summer months.

The Museum acquired 62 exhibition cases and 165 pieces of storage, laboratory, and office furniture.

COLLECTIONS.

The total number of specimens acquired by the Museum during the year was approximately 338,120. Additional material to the extent of 794 lots, mainly geological, was received for special examination and report. About 25,000 specimens were sent out in exchange, for which the Museum received much valuable material.

The distribution of specimens for educational work was broadened this year to include objects from the department of anthropology. Of the 6,000 specimens distributed as gifts in aid of education, over

0 were comprised in classified and labeled sets of specimens pre-
ed for schools and colleges, nearly 2,000 being ores and minerals.
: other subjects represented were rocks, rock weathering and soil
nation, mollusks, marine invertebrates, fishes, birds and birds'
s, insects, pottery, and prehistoric implements.

Anthropology.—The department of anthropology accessions were
ntifically more valuable than in the former year, because of the
nber of professionally collected specimens. The great majority
the accessions are unconditional gifts. The geographical source
the accessions in order is the United States, Asia, Africa, Poly-
ia, and scattering. The department received and recorded 2,324
cimens, and the work was well in hand at the close of the year.

)f especial note in ethnology are a collection of rare Mission In-
n baskets given by Miss Ella F. Hubby, of Pasadena, Calif.; a
narkable Cowichan Indian blanket with totemic paintings, a gift
Mrs. Charles C. Hyde, of Washington, D. C.; a finely carved
:ient wooden idol from Hawaii, collected many years ago by Rear
lmiral J. V. B. Bleecker, United States Navy; a collection of
:ved horn dishes and spoons from the Flathead Indians, gift of
. E. A. Spitzka, of Washington, D. C.; and a group of ancient
»ry fetishes from the Lower Congo, Africa.

The division of American archeology received a noteworthy col-
:tion from an ancient ruin near Taos, N. Mex., excavated by Mr.
A. Jeancon for the Bureau of American Ethnology; antiquities
»m cliff dwellings, collected by Mr. N. M. Judd for the same bu-
au; and antiquities from the ruins of Chaco Canyon, N. Mex.,
llected by Mr. Judd while conducting the expedition of the Na-
»nal Geographic Society to this region. Very interesting carved
»ne fetishes and ancient pottery from Santo Domingo were con-
ibuted by Dr. W. L. Abbott.

Old World archeology reports the receipt of Buddhist bronze fig-
ines from China and kakemonos from Japan, gift of Mrs. Murray
arner, of Eugene, Oreg.; other Buddhist bronze figures, given by
rs. John Van Rensselaer Hoff, of Washington, D. C., fill gaps in
e collection.

Physical anthropology received an immense consignment of skele-
l material of individuals of known sex, age, color, and nationality.
iis collection, which doubles the value of the material in the divi-
»n and will require several years' work to put in order and to cata-
gue, was received from the College of Physicians and Surgeons,
ew York City, through Dr. George S. Huntington. An important
llection of human brains was donated by Dr. E. A. Spitzka, of
/ashington, D. C. A number of skulls and skeletons of American
ndians was added to the collection through the University of South

Dakota and the Bureau of American Ethnology. These specimens are of much importance to the division.

Mr. Hugo Worch, of Washington, D. C., added to the Worch collection a copy of the Bach harpsichord and a dulcitone and 11 other pianos illustrating the history of the pianoforte. Mrs. Gouverneur Morris, of Washington, D. C., presented a piano handsomely decorated by Cottier, of New York.

A selection of rare oriental rugs from the collection of a connoisseur of Washington was hung in place of the collection previously on exhibit in the hall of art textiles.

The section of ceramics received a set of Japanese porcelain given Prof. Joseph Henry by the first Japanese minister to the United States, bequest from Miss Caroline Henry. Miss Freeman and Mrs. B. H. Buckingham, of Washington, D. C., presented some richly decorated Japanese plaques.

Biology.—From the numerical standpoint, as well as from the standpoint of the scientific interest of the collections, the year was a very prosperous one for the department of biology. The outstanding features of this year's accessions are the Australian collections made by Mr. Charles M. Hoy, which were the result of Dr. W. L. Abbott's continued interest in the Museum, and the great collection of Japanese mollusks donated by Mr. Y. Hirase, of Kioto, Japan, one of the most valuable accessions that has ever come to the division of mollusks. Dr. Abbott is also responsible for the addition of an important collection of birds and mammals made by Mr. C. Boden Kloss in Siam, Cochin China, and Anam. While engaged in geological work in the Rocky Mountains, Secretary Walcott procured for the Museum several desired Canadian mammals, including mule deer and mountain goats. Another valuable accession is that of Dr. J. P. Iddings's collection of butterflies and moths, presented by the heirs of Dr. Iddings, consisting of about 2,500 named species, mostly from the Tropics and mounted ready for exhibition. Through the continued generosity of Mr. B. H. Swales, bird skins, representing 38 species and 7 genera not hitherto contained in the national collection, were added. The botanical material accessioned during the year embraced over 14,000 specimens from Haiti and Santo Domingo, collected by Dr. Abbott and Mr. Leonard, besides a large number of valuable collections both from the Old and the New World.

Geology.—The additions to the collections in this department showed a marked increase over those recorded in any one of the past 15 years. The total number of accessions listed is 231, a gain of 51 over last year and of 29 over the number recorded in 1914–15, next highest on the list.

The greatest bulk of material was received by transfer from the United States Geological Survey, but numerous valuable specimens

were acquired chiefly by exchanges and gifts. These include a quantity of South American material comprising Bolivian tin and tungsten ores, and rare copper minerals from Chile, secured by Custodian F. L. Hess through Guggenheim Bros., New York City; Messrs. L. L. Ellis and Don Stewart, Oruro, Bolivia; and Prof. Joseph T. Singewald, of Johns Hopkins University. In addition a representative series of ores from Argentina was presented by the ambassador, Mr. Tomas A. Le Breton.

Interesting additions were made to the exhibit of radioactive minerals, including carnotite, euxenite, torbernite, and uraninite.

The meteorite collection was augmented by representatives of four falls, Forsyth County, N. C.; Chinautla, Guatemala; Troup, Tex.; and Owens Valley, Calif.

New and rare specimens were added to the mineral collection chiefly through exchanges. An attractive suite of precious opal in the matrix, ranging in color from the "black" opal to the pale, opalescent tints, was presented by the Rainbow Ridge Mining Co., operating in Humboldt County, Nev., and important additions to the collection of cut gems were acquired through the Frances Lea Chamberlain fund.

The petrological collection was enriched by the extensive series of igneous rocks from islands of the Pacific and Indian Oceans, collected by the late Dr. Joseph P. Iddings and presented by his sister, Mrs. Francis D. Cleveland. Including also the scientific portion of Dr. Iddings's library as well as valuable collections assigned to other departments of the Museum, this is considered one of the most notable accessions of the year.

Accessions of paleontological material aggregate at least 50,000 specimens and include much material from foreign sources. Several thousand specimens of Cambrian fossils, collected chiefly by Secretary Walcott, and approximately 25,000 specimens of Silurian and Devonian forms from Maine are also among the year's acquisitions.

Vertebrate remains of unusual interest and in large quantity were obtained by Mr. J. W. Gidley, collecting in Arizona under the joint auspices of the National Museum and United States Geological Survey. A portion of this, including a rare species of mastodon and a large glyptodon, is sufficiently complete to afford material for restoration and exhibition.

New exhibits include two cases containing gem minerals in the matrix, supplemental to the gem collection; an entirely new installment of the exhibit illustrating radioactivity, and instructive and showy biological series selected from the crinoid collection of Dr. Frank Springer; skeletons of the unique horned dinosaur, *Brachyceratops montanensis*, a wolverine, or Gulo, and a bear, and a biologic series illustrating the evolution of fossil plants.

Textiles, medicine, wood technology, and foods.—The collection under the supervision of the curator of textiles, which, besides tex tiles, embrace medicine, food, wood technology, and miscellaneou animal and vegetable products, were increased by many gifts and b transfer from other Government bureaus, amounting to nearly 1,00 objects. The most important of these are as follows:

From the Director of Air Service, War Department, specimens o the fabrics used in the construction and equipment of airplanes fo military use; also examples of the same fabrics which had been co verted to demonstrate the value for civilian use of the large surpl sold by the War Department to the public. There were added b gift many beautiful specimens of silks, fur fabrics, plushes, an velvets contributed by American manufacturers to show the progre of textile industries in this country.

The collections in the division of medicine were enlarged by series of the most frequently prescribed pharmaceutical preparatio arranged, according to their therapeutic action, into 26 groups, by large series of models, specimens, and photographs illustrating va cine and serum therapy and arranged to demonstrate the metho used to combat smallpox, lockjaw, pneumonia, cerebrospinal meni gitis, and hay fever. The collection illustrating pharmacy receiv valuable specimens of pharmaceutical apparatus and a large numb of additional documents and publications bearing on the history the United States Pharmacopœia.

Increased interest in the exhibition collections of the section wood technology resulted from the gift by the British Governme of a large section of one of the heavy oak beams taken from the ro of Westminster Hall during recent repairs to that historic structu The roof was built under the orders of Richard II, in 1399, and o timbers used therein, allowing for the age of the tree, must be least 1,000 years old. The timber presented to the Museum exemp fies the durability of British oak and gives an idea of the beauty the old craftsman's work.

Interest in the exhibits of the section of foods was increased by t addition of over 100 examples of canned fruits, vegetables, fish, a meats, which had been packed and preserved so as to present a m attractive appearance. This appetizing array of canned foods w all put up by children according to the cold-pack method and rep sented a selection from the jars winning prizes in 17 State conte between members of boys' and girls' canning clubs.

Mechanical and mineral technology.—One of the most import fields of the division of mechanical technology is educational exhi visualizing the developments in the transportation systems of country and the details of such progress. In this connection th were received a number of accessions, among which might be m

tioned the gasoline automobile designed and constructed by Charles E. Duryea in 1892–93, which represents probably the beginnings of the automotive industry in this country. Another valuable accession was that of an operating model showing the cylinder mechanism of the type of internal-combustion engine developed by the Willys-Overland Co., of Toledo, Ohio.

In the branch of aeronautics the extensive collections of the Institution were further enhanced by the receipt of the original experimental hydroplane model devised by Mr. Edson F. Gallaudet, chairman of the board of directors of the Gallaudet Aircraft Corporation, East Greenwich, R. I. This model was constructed and experimented with in 1898, and is particularly interesting in that means for lateral control and wing warping were incorporated but in practice were unsuccessful.

The collections devoted to horology were increased through the efforts of Mr. George W. Spier, honorary custodian of watches, by the receipt of 10 valuable old watches; and Mr. Emile Berliner, of Washington City, very generously presented two gramophones of importance in the development of the talking machine, namely, the first commercial type developed in 1893, and an electrically operated machine devised by Mr. Berliner in 1896.

Among the accessions received in mineral technology was one consisting of over 400 specimens visualizing the interrelationship of the several chemical industries of importance in the production of aniline dyes, war gases, pharmaceuticals, and explosives.

Graphic arts.—The increment in graphic arts included an exhibit of hand-made paper; two books made along sixteenth century lines, all the work of one man, type, composition, and paper; facsimiles in type metal of 50 characters of supposedly the first font of metal type ever cast; wood block prints by Thomas Bewick, the father of wood engraving as used to-day; engraved wood block with progressive proofs in color by Rudolph Ruzicka; an exhibit of lead molding electrotypes and the McKee treatment of electrotype plates; photogelatine and photogravure work extending over 30 or 40 years; historical examples of rotary photogravure; beautiful examples of modern printing in black and white and color; soft ground etchings in color by Benjamin C. Brown; etched plate with trial proofs by Frank W. Benson, and dry-point etchings of President Harding, taken from life by Walter Tittle. To the photographic section were added a Jenkins camera making 30,000 exposures a minute; a print from the first negative made in the United States by the Belin method of sending portraits by wire; Civil War photographs by Brady and large toned bromides of the World War showing comparative methods of warfare and photography; and illustrations of a number of hitherto unrepresented photographic processes.

History.—The historical collections received important additions during the past year. Those relating to the World War were for the most part of a naval character. The Navy Department transferred to the Museum a large aggregation of materials illustrating the part played by that branch of the service during the war, including naval airplanes of the type and design used for patrol and convoy duty during the conflict, models of naval vessels used during the same period, various examples of marine instruments used on these ships, and a large number of guns and miscellaneous ordnance material. The Navy Department also increased its exhibition by a number of naval objects captured from the enemy in the war zone. These include the engines of a German submarine, a submarine torpedo, and a number of smaller German naval projectiles. The exhibit of the Navy Department already presents in a striking and graphic manner the leading features of the work of the Navy during the war, and plans have been made to develop it into one of the most notable collections of the kind in existence. The numismatic and pictorial sections of the war collection received valuable additions the former including a number of war decorations and commemorative medals and the latter two large paintings by Arthur M. Hazard, entitled "Not by Might" and "The Spirit of the Armistice." The collection was increased by British and Canadian uniforms, and documents relating to the services of Lieut. Louis Bennett, of the Royal Air Force, killed in action in France, given the Museum by his mother, Mrs. Louis Bennett, of Weston, W. Va.; and a collection of French military objects, including a steel listening post, a steel cupola with guns, a catapult, a Brandt cannon, a number of hand and rifle grenades, and miscellaneous relics presented by the French Government.

Of the antiquarian material may be mentioned a watch seal of carnelian set in gold, bearing the Washington crest and owned by Gen. Washington subsequent to the War of the Revolution. This exceptionally interesting and valuable object was presented to the Museum by Mr. William Sloane, of New York. The National Society of Colonial Dames of America added to their collection a number of interesting pieces. Of special interest also is a very handsome silver punch bowl with tray, ladle, and 10 mugs, presented to Col. George Armistead by citizens of Baltimore in recognition of his services in connection with the defense of Fort McHenry, Baltimore Harbor, in 1814. These have been presented to the Museum by Mr. Alexander Gordon, jr., of Baltimore, a great grandson of Col. Armistead. The military, the naval, the numismatic, and the philatelic sections of the original historical collections also received large additions during the year.

The Herbert Ward collection.—The Herbert Ward collection of rican ethnologica, together with sculptures of African subts by Mr. Ward, forming a unique assemblage illustrative of e culture of the unmodified natives, was packed and shipped om Paris on June 25, 1921. Mr. Ward was born in London, ngland, in 1862. At the age of 15 he set out on travels which ok him over many of the unexplored lands of the world, and 21 he began his work in Africa. While in the Congo in the nploy of the Belgian Government he rendered important aid to anley in his explorations. For more than five years Mr. Ward ed among the natives of Central Africa, and during this time developed the idea of preserving an epitome of the primitive life th which he was then surrounded and which would be an index of e primitive life of all men. The African Negro that Mr. Ward ndied impressed him as possessing fine qualities of simple dignity d loyalty. Mr. Ward was by instinct and training a lover of t and constantly recorded his impressions of the natives at first nd. The records which he made on the spot were used in his bsequent famous works of sculpture, which portray the soul of rica. Mr. Ward in this collection has contributed a noble effort r the benefit of art, science, and humanity. This collection, in ordance with Mr. Ward's wishes, was forwarded to the Museum his widow, Mrs. Sarita Sanford Ward.

Partello bequest.—By the terms of the will of Dwight J. Partello, ered for probate during the year, the Museum is bequeathed his lection of musical instruments, bows, and cases, gathered during ny years of collecting; 37 paintings; a gold and silver bowl or ket presented to Mr. Partello by the Czar of Russia; and a diploma d medal awarded him for his exhibit of violins at the Chicago Exsition in 1893. This well-known collection illustrating the Italian nool of violins is of great intrinsic value and numbers 25 instruents of the violin family, made by the best masters in pure conuction, including Amati, Stradavari, Bergonzi, Guarnerius, and ers. At the end of the year the estate had not been settled.

EXPLORATIONS AND FIELD-WORK.

Owing to very limited appropriations, the Museum is unable to lertake field-work except in cooperation with individuals or other entific institutions where the expenses are mostly borne by them. e expeditions sent out during the past year have been financed alst entirely from outside sources.

Archeological survey in the Pueblo region.—Mr. N. M. Judd, ator of American archeology, made an extensive reconnaissance Arizona and New Mexico in the summer of 1920 in connection

with the projected archeological work to be taken up by the National Geographic Society, resulting in valuable accessions to the Museum. At the date of this report he was in the field conducting explorations in the ancient ruins of Chaco Canyon, N. Mex., for that society. Good results are reported in the preliminary stages of this work, which is expected to cover five summers. Under the arrangement with the society most of the specimens obtained will come to the National Museum.

Australian expedition.—Mr. Charles M. Hoy, who has been collecting vertebrates in Australia since June, 1919, supported by a fund placed at the disposition of the institution by Dr. W. L. Abbott, continued his field-work during the year. He collected at several stations in South Australia, where he also visited Kangaroo Island, at two stations in West Australia, and in the Northern Territory. Forty-four days were spent in working an area of 30 miles in extent. Later on two camps were established in New South Wales, one near the highest point on the northern tableland at an elevation of 5,000 feet and one 1,000 feet lower. Altogether, the year's work was very successful. The two shipments received during the year totaled 571 mammals and 534 birds, well prepared, many of which were hitherto unrepresented in our collections. A number of interesting reptiles, amphibians, and marine invertebrates were also included.

Dr. Abbott's explorations in Santo Domingo.—Late in 1920 Dr. W. L. Abbott undertook personally another expedition, this time visiting the north side of Santo Domingo (Villa Riva, Pimentel, Catui, Mao, in the Yaqui Valley, and several points on the Samana Peninsula) and returning in May, 1921. He brought back a small but select collection of birds, but his main efforts were devoted to the collecting of plants, approximately 4,000 of which have been received and will doubtless prove of great value.

The Smithsonian African expedition.—The expedition mentioned in last year's report as having been sent out in conjunction with the Universal Film Manufacturing Co. to South and Central Africa concluded its biological work on July 14, 1920, after which Mr. H. C. Raven, the Smithsonian collector and naturalist, returned to the United States. Though not numerically large, the collection brought home are of unusual interest on account of the manner in which they supplement those obtained by other expeditions in which the Smithsonian Institution has been interested.

Field-work in vertebrate paleontology.—Early in the year Assistant Curator J. W. Gidley was detailed to visit Williamsburg, Va., to investigate a reported find of some fossil bones in that vicinity. These proved to be the remains of an extinct species of whale of Miocene age, but were incomplete and too badly damaged to make possible the recovery of a sufficient number for an exhibition mount

Two other important field expeditions were undertaken by Mr. idley, the first as the result of reports from Mr. Kirk Bryan, of ıe United States Geological Survey, who had discovered some romising localities for fossil vertebrate remains while making an ıtensive survey of the underground water resources of the San 'edro Valley of Arizona. Mr. Gidley spent two months or more in ıe Arizona field, visiting three localities in the San Pedro Valley nd one in Sulphur Springs Valley. The last yielded only frag- ıentary remains of Pleistocene mammals, but much better results ere obtained in the San Pedro Valley, where two localities, one bout 2 miles south of Benson, the other at the Curtis ranch, about 4 miles south of Benson, yielded remains of about 30 species, mostly nammals, which seem to represent a new or little-known Pliocene 'auna. Mr. Gidley shipped 21 boxes, with an aggregate weight of ıbout 4,630 pounds. A portion of this material will be suitable for :xhibition, the most important being remains sufficiently complete :o form the basis of skeleton restoration of a rare species of mastodon ınd a large edentate. Other remains represent extinct species of :amels, carnivorous animals, rodents, turtles, and birds.

The second expedition, entirely under Museum auspices, included ı trip to Agate Springs, Nebr., where was secured a large slab, or ɔlock of limestone, containing remains of the little rhinoceros, *Diceratherium cooki*. This will be cleaned and exhibited with the bones in situ.

Mr. C. W. Gilmore was detailed in April to visit a fossiliferous area some 36 miles north of Santa Fe, N. Mex., for the purpose of making collections of paleontological material, and for determining the advisability of reserving certain lands for national monument purposes. A skull, lower jaws, and other bones of an extinct rhinoceros, various limb and foot bones of a camel, and a small collection of miscellaneous specimens were obtained as a result of this trip.

Other expeditions in which the Museum was interested are briefly described in the first part of this report which relates to the affairs of the Smithsonian proper.

MEETINGS AND CONGRESSES.

The accommodations afforded by the auditorium and committee rooms in the Natural History Building were utilized on many occasions. A course of evening lectures on the history and nature of international relations, extending from October to May, was given under the auspices of the school of foreign service of Georgetown University, while two local scientific societies, the Anthropological Society of Washington and the Entomological Society of Washington, made the building their regular meeting place.

The National Academy of Sciences held its annual meeting fro April 25 to 27, the first evening being given over to an address b His Serene Highness, the Prince of Monaco, followed by a rece tion by the Regents and secretary of the Institution in the ha assigned to the National Gallery of Art. Other societies holdi here their annual gatherings, some lasting several days, included t Northern Nut Growers' Association; the American Ornithologi Union; the American Farm Economic Association; the Americ Society of Mammalogists; the Audubon Society of the District Columbia; and the American Institute of Architects. In connect with the last, the Second National Architectural Exhibition, instal in the near-by lobby and foyer, was inaugurated by a special even opening of the building.

During its convention in Washington in May, the American F eration of Arts held an afternoon session in the Museum auditori and the delegates were tendered a reception by the Regents and se tary of the Institution in the National Gallery of Art on the even of that date, with a special view of the collection of war portra brought together by the National Portrait Committee as a nucleu a national portrait gallery. In connection with the visit of Mad Marie Curie to this country, a meeting was arranged in her ho in the auditorium with a lecture by Dr. R. A. Millikan on radium, exhibition halls on the two lower floors being thrown open for spection during the evening.

The program of the Washington convention of the Ameri Bankers' Association also included an evening reception by Board of Regents and secretary of the Smithsonian in the Nat History Building. The Southern Commercial Congress, during meeting in Washington, used the auditorium for presenting to Department of Agriculture a portrait of the late David Lubin, Italian ambassador assisting in the ceremonies.

Meeting facilities were afforded governmental agencies as foll The Bureau of Public Health Service of the Treasury Departm for an institute on venereal disease control, lasting several d and for showing motion pictures relating to its work on sev occasions; the Department of Agriculture, for numerous meet and conferences in relation to the work of the Federal Horti tural Board, the Forest Service, the Bureau of Plant Industry, States Relations Service, and the Bureau of Markets; the A Medical School of the War Department, for a lecture by Dr. Hi Noguchi, and for the closing exercises of the 1920–21 session of school; the Post Office Department, for a lecture by Mr. D. F. land; the Commission of Fine Arts; and the Federal Board of cational Education. Single lectures were given under the aus of the National Research Council, the Geological Society of W

ington, the Washington Academy of Sciences, Georgetown University, and the Osteopathic Association of the District of Columbia.

At the First Pan Pacific Scientific Congress, held in Hawaii from August 2 to 20, 1920, the Museum was represented by the following members of the staff of the Smithsonian Institution: Mr. John B. Henderson, Regent of the Institution; Dr. Paul Bartsch; Dr. Gerrit S. Miller, j.; Dr. T. Wayland Vaughan; and Mr. Gerard Fowke.

MISCELLANEOUS.

The attendance of visitors to the Natural History Building during the year aggregated 364,281 for week days and 103,018 for Sundays, being a daily average of 1,167 for the former and 1,981 for the latter. At the Arts and Industries Building the total attendance was 286,397, a daily average of 917. The Aircraft Building had an attendance of 31,235 for the portion of the year it was open, an average of 147 persons daily. The total attendance in the Smithsonian Building on week days was 90,097, an average of 288, and on the one Sunday 138.

The publications of the year comprised the annual report for 1920, 8 bulletins, and 60 separate papers. The latter consisted of 4 parts of bulletins, 5 parts of Contributions from the National Herbarium, and 51 proceedings papers. The total number of copies of publications distributed was about 89,000.

The library obtained, by purchase, gift, and exchange, 2,041 completed volumes and 2,719 pamphlets. The more important donations were from Mrs. Francis D. Cleveland, Dr. Charles D. Walcott, and Dr. W. H. Dall, the former contributing the scientific library of the late Joseph Paxson Iddings, petrologist.

While it is the primary duty of a museum to preserve the objects confided to its care, as it is that of a library to preserve its books and manuscripts, yet the importance of public collections rests not upon the mere basis of custodianship nor upon the number of specimens assembled and their money value, but upon the use to which they are put. Judged by this standard, the National Museum may claim to have reached a high state of efficiency. From an educational point of view it is of great value to those persons who are so fortunate as to reside in Washington or who are able to visit the Nation's capital. In its well-designed cases, in which every detail of structure, appointment, and color is considered, a selection of representative objects is placed on view to the public, all being carefully labeled individually and in groups. The child as well as the adult has been provided for, and the kindergarten pupil and the high school scholar can be seen here supplementing their classroom games or studies. Under authority from Congress, the small col-

leges and higher grades of schools and academies throughout the land, especially in places where museums do not exist, are also being aided in their educational work by sets of duplicate specimens, selected and labeled to meet the needs of both teachers and pupils.

Nor has the elementary or even the higher education been by any means the sole gainer from the work of the Museum. To advance knowledge, to gradually extend the boundaries of learning, has been one of the great tasks to which the Museum, in consonance with the spirit of the Institution, has set itself from the first. Its staff, though chiefly engaged in the duties incident to the care, classification, and labeling of collections in order that they may be accessible to the public and to students, has yet in these operations made important discoveries in every department of the Museum's activities, which have in turn been communicated to other scholars through its numerous publications. But the collections have not been held for the study of the staff nor for the scientific advancement of those belonging to the establishment. Most freely have they been put at the disposal of investigators connected with other institutions, without whose help the record of scientific progress based upon the material in the Museum would have been greatly curtailed. When it is possible to so arrange, the investigator comes to Washington; otherwise such collections as he needs are sent to him, whether he resides in this country or abroad. In this manner practically every prominent specialist throughout the world interested in the subjects here well represented has had some use of the collections, and thereby the National Museum has come to be recognized as a conspicuous factor in the advancement of knowledge wherever civilization has a foothold.

Respectfully submitted.

W. DE C. RAVENEL,
Administrative Assistant to the Secretary,
In charge United States National Museum.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

APPENDIX 2.

REPORT ON THE NATIONAL GALLERY OF ART.

SIR: I have the honor to submit herewith the following report on e affairs of the National Gallery of Art for the year ending June), 1921.

ORGANIZATION AND HISTORY OF THE GALLERY.

The National Gallery of Art, which is the legal depository of all bjects of art belonging to the Nation, has heretofore been administered in connection with the United States National Museum. By he action of the Sixty-sixth Congress in providing "for the administration of the National Gallery of Art by the Smithsonian Institution, including compensation of necessary employees and necessary ncidental expenses," its connection with the Museum was severed nd it became the seventh administrative branch under the Institution on July 1, 1920.

A full account of the inception of the art activities of the Institution and of the early struggles of the incipient Gallery of Art, prepared by the late Assistant Secretary of the Institution, Dr. Richard athbun, is given in Bulletin 70 of the United States National luseum (edition of 1916), and a brief résumé may be given here a suitable introduction to the first annual report of the gallery nder the new régime, and at the same time emphasizing the imerfectly recognized fact that art was placed on an equal footing ith science in the foundation of the Institution.

The Smithsonian Institution was founded in 1846 by a fund proded by James Smithson and was organized under the control of a oard of regents. By act of the Congress of the United States pproved August 10, 1846, establishing the Smithsonian Institution, was provided:

> That, so soon as the Board of Regents shall have selected the said site [for building], they shall cause to be erected a suitable building, of plain and urable materials and structure, without unnecessary ornament, and of suffient size, and with suitable rooms or halls, for the reception and arrangent, upon a liberal scale, of objects of natural history, including a geoical and mineralogical cabinet; also a chemical laboratory, a library, a galy of art, and the necessary lecture rooms, etc.

Immediately upon the organization of the Board of Regents, in ptember, 1846, a committee from its membership was appointed digest a plan for carrying out the provisions of this act. The

committee's report, submitted on January 25, 1847, contained the following recommendations on the subject of the fine arts:

The gallery of art, your committee think, should include both paintings and sculpture, as well as engravings and architectural designs; and it is desirable to have in connexion with it one or more studios, in which young artists might copy without interruption, being admitted under such regulations as the board may prescribe. Your committee also think that as the collection of paintings and sculpture will probably accumulate slowly, the room destined for a gallery of art might properly and usefully meanwhile be occupied during the session of Congress as an exhibition room for the works of artists generally; and the extent and general usefulness of such an exhibition might probably be increased, if an arrangement could be effected with the Academy of Design, the Arts Union, the Artists' Fund Society, and other associations of similar character, so as to concentrate at the Metropolis, for a certain portion of each winter, the best results of talent in the fine arts.

The Smithsonian Building was completed in 1855, and served for a period of eight years to accommodate the collections of all classes. Serious discouragement of the art interests in the Institution resulted from the disastrous fire, which in 1865 burned out the second story of the building, destroying its contents, including portions of the art collections. The remaining works were removed, the paintings and statuary to the Corcoran Gallery and the engravings to the Library of Congress. Many years later they were in large part returned to the Institution, and but little of importance transpired until 1906, when a collection of paintings and other art works, was bequeathed to the Corcoran Gallery of Art by Harriet Lane Johnston, mistress of the White House during President Buchanan's administration, subject to the condition that should a national gallery be established in Washington they should become the property of that gallery. This led to an inquiry regarding the status of the Institution as a national gallery, and the question was referred to the Supreme Court of the District of Columbia, which rendered the decision that the Institution is the duly constituted National Gallery of Art. The text of the decision is as follows:

It is, therefore, on this eleventh day of July, in the year 1906, by the Supreme Court of the District of Columbia, sitting in Equity, and by the authority thereof, adjudged, ordered, and decreed,

That there has been established by the United States of America in the City of Washington a National Art Gallery, within the scope and meaning of that part of the codicil bearing date April 21, 1902, made by the said Harriet Lane Johnston to her Last Will and Testament, in the proceedings in this case mentioned, wherein she gave and bequeathed the pictures, miniatures, and other articles to the Trustees of the Corcoran Gallery of Art, and in the event of the Government establishing in the City of Washington a National Art Gallery, then that the said pictures and other articles above mentioned should be delivered to the said National Art Gallery and become its property; and that the said National Art Gallery is the National Art Gallery established by

the United States of America at, and in connection with, the Smithsonian Institution, located in the District of Columbia, and described in the Act of Congress entitled an Act to establish the "Smithsonian Institution" for the increase and diffusion of knowledge among men, approved August 10, 1846 (9 Stat. L., 103; Title LXXIII, sec. 5579, R. S., U. S.), and the subsequent acts of Congress amendatory thereof; and it is further adjudged, ordered, and decreed that the United States of America is entitled to demand and receive from the surviving Executors of the said Harriet Lane Johnston, the Complainants named in the bill of complaint in this case, all of the above-mentioned pictures, articles of sculpture, engravings, miniatures, and other articles, the same to be and become a part of the said National Art Gallery so established by the United States of America at, and in connection with, the said Smithsonian Institution.

* * * * * * *

WENDELL P. STAFFORD, *Justice.*

The collection was therefore assigned to its care. Since that time the national collections have increased rapidly, chiefly, however, through gifts and bequests of art works by patriotic citizens.

It is a noteworthy fact that until the beginning of the year 1920–21 no appropriation had been made for the gallery or for the purchase of art works, and no provision for the employment of a salaried curator or other employees of the gallery, all works of art being associated with the department of anthropology of the National Museum. It happened thus that the organization of the gallery as a separate unit of the Institution did not require any radical change in the personnel of the gallery, the curator of the department of anthropology, who had previously cared for the art collections, becoming director, and the recorder of that department becoming the recorder of the gallery.

THE HENRY WARD RANGER FUND.

Fortunately, a liberal private fund has recently become available for the increase of the collections. The will of the late Henry Ward Ranger provides the sum of $200,000, the interest of which is to be devoted to the purchase of works of art for the National Gallery, the carrying out of the bequest being intrusted to the National Academy of Design. The provision is as follows:

All pictures so purchased are to be given by the Council to Art institutions in America, or to any library or other institutions in America maintaining a gallery open to the public, all such gifts to be upon the express condition that the National Gallery at Washington, administered by the Smithsonian Institute, shall have the option and right, without cost, to take, reclaim, and own any picture for their collection, provided they exercise such option and right at any time during the five-year period beginning ten years after the artist's death and ending fifteen years after his death; and, if such option and right is not exercised during such period, the picture shall remain and be the property of the institution to which it was first given.

The purchases so far made by the council of the academy are as follows:

Title.	Artist.	Date of purchase.	Assigned to—
1918–19.			
1. December Uplands.	Bruce Crane	Apr. 27, 1919	Syracuse Museum of Art.
1919–20.			
2. Evening Tide, California.	Wm. Ritschel	Jan. 11, 1920	National Gallery.
3. Grey Day	W. Granville-Smith	do	Do.
4. The Rapids	W. Elmer Schofield	May 2, 1920	Brooklyn Museum.
5. The Orange Bowl	Anna Fisher	do	Rhode Island School of Design, Providence, R. I.
1920–21.			
6. The Flower Girl	Helen M. Turner	Apr. 4, 1921	Detroit Institute of Art, Detroit, Mich.
7. Shrine of the Rain Gods.	E. Irving Couse	do	Toledo Museum of Art, Toledo, Ohio.
8. The Moate Range	Aldro T. Hibbard	do	Portland Society of Art, Portland, Me.
9. A Corner in Central Park.	Arthur J. E. Powell	do	Milwaukee Art Institute, Milwaukee, Wis.
10. Central Park and the Plaza.	Wm. A. Coffin	do	Brooks Memorial Art Gallery, Memphis, Tenn.

The advisory committee of the gallery took up the question of the acceptability of these works, but it was later decided that the question of acceptance could more appropriately await final consideration until the dates of recall provided for by the bequest, namely, the five-year period beginning ten years after the artist's death in each case.

THE NATIONAL PORTRAIT COMMITTEE.

A second agency of primary importance to the gallery and to American history is found in the organization and activities of the National Portrait Committee. In January, 1919, a number of patriotic citizens and patrons of art realized that if the United States was to have a pictorial record of the World War it would be necessary to take immediate steps. A number of the distinguished leaders of America and of the Allied Nations were approached and their consent secured for the painting of their portraits by prominent American artists. With the indorsement of the Smithsonian Institution as custodian of the National Gallery of Art, the American Federation of Arts, and the American Mission to Negotiate Peace, then in session at Paris, the National Portrait Committee came into being for the purpose of carrying out this idea and thus initiating and establishing in Washington a National Portrait Gallery. The members of the committee as organized are: Hon. Henry White, chairman; Herbert L. Pratt, secretary and treasurer; Mrs. W. H. Crocker, Robert W. deForest, Abram Garfield, Mrs. E. H. Harriman,

thur W. Meeker, J. Pierpont Morgan, Charles P. Taft, Charles D. ılcott, and Henry C. Frick (deceased).

That the gift of these paintings to the National Gallery might be ›roughly national in character, it was decided that a group of ›se portraits, financed by the art patrons of any city, would be in-›ibed as presented to the National Gallery by that city and that a ›resentative of that city should become an honorary member of the ıtional Portrait Committee. It was further decided that a tablet or ›her permanent record in the National Portrait Gallery should bear e names of the National Portrait Committee, including the chair-›n of all local committees; and that there should be a record of the mes of each subscriber to the purchase fund.

Twenty portraits completed under this arrangement were exhibited the National Gallery during the month of May, 1921, and these, ıth such others as may be subsequently completed, will be shown in number of cities throughout the United States before being per-anently installed in Washington. The exhibition is being circu-ted under the auspices of the American Federation of Arts. The ›rtraits available for exhibition at the close of the year are as ›llows:

By Cecilia Beaux:
Admiral, Sir David Beatty.
Premier Georges Clemenceau.
Cardinal Desire Joseph Mercier.

By Joseph De Camp:
Premier, Sir Robert Laird Borden.
General, Sir Arthur William Currie.

By Charles Hopkinson:
Premier Joan J. C. Bratiano.
Premier Nikola Pashich.
Prince Kimmochi Saionji.

By John C. Johansen:
Field-Marshal, Sir Douglas Haig.
Marshal Joseph Joffre.
Gen. Amando Diaz.
Premier Vittorio Emanuele Orlando.
Signing of the Peace Treaty, June 28, 1919.

By Edmund C. Tarbell:
Marshal Ferdinand Foch.
Gen. Georges Leman.
Woodrow Wilson.

By Douglas Volk:
His Majesty Albert I of Belgium.
Premier David Lloyd George.
Gen. John Joseph Pershing.

By Irving R. Wiles:
Admiral William Snowden Sims.

The portraits to be added, according to the plans of the committee, are:

By Jean McLane:
Her Majesty Elizabeth, Queen of the Belgians.
Premier William Morris Hughes.
Premier Eleutherios K. Venizelos.
By Edmund C. Tarbell:
Herbert Clark Hoover.

Through the courtesy of the American Federation of Arts these portraits were exhibited for a short period (May 5–22) in the large middle room of the gallery, where they attracted much attention. During this period the federation held its annual meeting in Washington, and on May 18 the Regents of the Smithsonian Institution gave a reception to the federation in the halls of the gallery, which was well attended by the members and by the citizens of Washington.

ART WORKS ACQUIRED DURING THE YEAR.

Aside from the Ranger purchases and the war portraits, the permanent acquisitions for the year are as follows:

An oil portrait of the late Julius Bien, painted by George Da Madura Peixotto in 1886. Gift of Mr. Julius Bien, of New York, through the Hon. Simon Wolf.

Monarch of the Farm (Norman bull), by William Henry Howe, N. A., painted in 1891. Gift of Mrs. William Henry Howe (Mrs. Julia May Clark Howe).

The Gathering Storm, by Eugène Louis Gabriel Isabey, 1864. Presented by Mrs. Gibson Fahnestock, in Memory of Maj. Clarence Fahnestock, of the American Expeditionary Forces.

Love and Life, by George Frederick Watts, R. A. Gift of the artist to the American people in 1898; accepted by act of Congress approved July 23, 1894; transferred to the gallery from the White House on March 21, 1921.

Portrait of a Gentleman (with white wig), attributed to Sir Godfrey Kneller (1646–1723). Bequeathed by Miss Caroline Henry.

Soldat de Crimée, by Harriet Blackstone. Gift of Mr. Barent G. Poucher and his wife, Florence Holbrook Poucher.

Portrait bust (white marble) of Hon. John Sherman, by Daniel Chester French, N. A., 1886. Gift of Lieut. John Sherman McCallum, through Mr. Charles Moore.

Portrait bust (bronze) of Brig. Gen. Joseph Wheeler, by William Rudolf O'Donovan, A. N. A. Gift of the memorial committee and contributors, through Mr. Henry Clews, surviving member of the committee.

e Wanderlusters' Rest, by William Henry Holmes. Gift of the

walk to Gethsemane, by Johannes Adam Simon Oertel. Gift J. F. Oertel.

LOANS.

hough, on account of the shortage of space in the gallery, onal loans are not readily exhibited, the following were accepted g the year:

trait of Dr. William Healy Dall and a full-length portrait of ge Washington, by Wilford Seymour Conrow. Lent by the . The latter was withdrawn before the close of the year.

ievra dei Benci, attributed to Leonardo da Vinci (1452–1519). by the Misses Janet R. and Mary Buttles.

iena, attributed to Simon De Vos (1603–1676). Lent by Miss Warner. Withdrawn before the close of the year.

e portraits; lent by Mrs. Archibald Hopkins (Mrs. Charlotte tt Wise Hopkins) as follows: Col. Mark Hopkins, Continental artist not given; Dr. Mark Hopkins, pastel by Sarony of York; Hon. Edward Everett, by Asher Brown Durand; Mrs. rd Everett, by Gambadella; and Charlotte Brooks Everett Mrs. Henry Augustus Wise), by George P. A. Healy.

trait of Surgeon Baily Washington, jr., United States Navy, -1854), artist not given. Lent by Miss Alice M. Reading, his daughter.

trait of Miss Ellen Day Hale, by Mrs. Margaret W. Lesley Brown. Lent by the artist.

ist in the Temple, by J. B. Tiepolo; The Doctor's Visit, by Jan Dedham Vale, by John Constable; and A Young Dutch Girl, Drost. Lent by Mr. Ralph Cross Johnson.

trait of Mrs. Charles Eames, by Gambadella. Lent by Mrs. rdon-Cumming.

trait of George Washington, by Rembrandt Peale; portrait of Van Schaick Lansing Pruyn, by Charles Loring Elliott. Lent Hon. Charles S. Hamlin.

en Cameos—the Pickering Dodge collection. Lent by Mrs. es W. Rae.

trait bust (bronze) of Maj. Gen. George Owen Squier, Chief l Officer, United States Army, by Moses Wainer Dykaar. Lent n. Squier.

trait bust (marble) of the late Senator Justin Smith Morrill, rmont, by Preston Powers. Lent by Dr. Charles L. Swan gh Senator W. P. Dillingham.

tue of Pan (white marble). Lent by Brig. Gen. George P. n, United States Army.

DISTRIBUTIONS.

Loans have been withdrawn by the owners as follows: Full-length portrait of George Washington, by Wilford S. Conrow, returned to Mr. Conrow on his request. Athena, attributed to Simon De Vos, was withdrawn by Miss May Warner.

In November, 1920, five paintings, the property of the National Gallery, by five living American artists, were lent to the American Federation of Arts to be associated with twelve other notable paintings from other sources on an exhibition circuit, which included Davenport, Iowa; Moline, Mich.; Syracuse, N. Y.; Memphis, Tenn.; Oklahoma City, Okla.; Jackson, Mich.; and Ann Arbor, Mich. The five paintings—Caresse Enfantine, by Mary Cassatt; A Family of Birches, by Willard Metcalfe; The White Parasol, by Robert Reid; November, by Dwight Tryon; and Southwesterly Gale, by Frederick J. Waugh—were returned to the gallery near the close of the fiscal year.

Mrs. Augusta H. Saint-Gaudens withdrew her bust of Lincoln for a Saint-Gaudens exhibit at the Carnegie Institute, Pittsburgh, Pa., in the early part of 1921. It was returned to the gallery at the close of the exhibit.

THE NATIONAL GALLERY OF ART COMMISSION.

An important forward step in the development of the gallery was made during the year. On May 27, 1921, the Board of Regents of the Institution, having the future of the gallery in mind, took the initial steps in the establishment of the National Gallery of Art Commission, formulating a plan of organization and naming the following board to take the steps necessary to its elaboration:

Public men interested in fine arts: W. K. Bixby, Joseph H. Gest, Charles Moore, James Parmelee, Herbert L. Pratt.

Experts: John E. Lodge, Frank Jewett Mather, jr., Charles A. Platt, Edward W. Redfield.

Artists: Herbert Adams, Edwin H. Blashfield, Daniel Chester French, Gari Melchers, William H. Holmes.

Dr. Charles D. Walcott, secretary of the Institution, was named a member of the commission ex officio.

The primary functions of the commission are "to promote the administration, development, and utilization of the National Gallery of Art, including the acquisition of material of high quality representing the fine arts; and the study of the best methods of exhibiting material to the public and its utilization for instruction."

At the first meeting of the commission, June 8, the organization was completed and committees were appointed to take charge of the various branches of the work. These are: Executive committee,

ırles Moore (chairman) Herbert Adams, Daniel Chester French, H. Holmes (secretary), James Parmelee, and Charles D. Walcott; ısory committee (chairman to be named), Herbert Adams, Edwin Blashfield, W. H. Holmes, Gari Melchers, Charles A. Platt, and ward W. Redfield; and 12 special committees: (*a*) On ancient ropean paintings, Frank Jewett Mather, jr., chairman; (*b*) on nts excepting the oriental, James Parmelee, chairman; (*c*) on lpture, Herbert Adams, chairman; (*d*) on American paintings, ward W. Redfield, chairman; (*e*) on mural paintings, Edwin H. ıshfield, chairman; (*f*) on ceramics, Joseph E. Gest, chairman; on oriental art, John E. Lodge, chairman; (*h*) on modern Euro- n art, Gari Melchers, chairman; (*i*) on architecture, Charles A. tt, chairman; (*j*) on portrait gallery, Herbert L. Pratt, chair- n; (*k*) on textiles, ——— ———, chairman; and on building, ırles Moore, chairman. The executive committee met and or- ıized on June 17, 1921, and at the close of the year considerable gress had been made in the organization of the special committees. he value of the National Gallery collections already in hand is mated at several million dollars, their acquirement being due en- ly to the generous attitude of American citizens toward the ional Gallery of Art, no single work of painting or sculpture in its possession having been acquired by purchase. It can dly be doubted that when a building is provided in which contri- ions can be cared for, and exhibited to the public in the manner y deserve, many collectors seeking a permanent home for their ısures will welcome the opportunity of placing them in the tody of a national institution. The providing of a suitable build- for the gallery is all that is necessary to make Washington in the rs to come an art center fully worthy of the Nation.

he act of Congress establishing the institution provided for a artment or gallery of the fine arts and limited its scope to paint- s, sculpture, engravings, and architectural designs—limitations ch experience has shown lack elasticity, since the fine arts extend arious directions into other fields of culture. The chief difficulty confining the collections to this narrow field is that, while the itution has depended, and must depend very largely, on gifts and uests for its development, these gifts and bequests contain a large entage of art material quite outside of the limitations indicated, llustrated in the Freer, the Harriet Lane Johnson, and the Pell ections. It would thus appear that the gallery may well antici- that when a building is provided for art, the scope of the subject ter will necessarily extend to all branches furnishing art ma- al rising into the realm of the fine arts as manifestly contem- ed in the organization of the gallery commission.

A chief undertaking of the year was the preparation of an illustrated catalogue of the collections, which is practically ready for the printer at the close of the year. An illustrated catalogue of the Ralph Cross Johnson collection of paintings by old masters, written by Mr. George B. Rose of Little Rock, Ark., was published in the September (1920) number of the journal, Art and Archaeology (Vol. X, No. 3), and copies of this have been on sale during the year in the room devoted to these works.

LIST OF PUBLICATIONS.

FINE ARTS.

The National Art Committee Exhibition of War Portraits: Signing of the Peace Treaty, 1919, and Portraits of Distinguished Leaders of America and of the Allied Nations. Painted by Eminent American Artists for Presentation to the National Portrait Gallery. National Gallery of Art, under Direction of the Smithsonian Institution, Washington, D. C., May 5 to 22, 1921. Catalogue of the Portraits by Florence N. Levy. 30 pages and cover, illustrated. Irving Press, New York, 1921. Copyright, 1921, by The National Art Committee.

Rose, George B. The Ralph Cross Johnson Collection in the National Gallery at Washington, D. C. 24 illustrations. Art and Archaeology, Vol. X, No. 3, Sept. 1920, pp. 75–110.

A critical and appreciative review of the collection of twenty-four old masters of the Florentine, Bolognese, Venetian, Flemish, Dutch, and British schools presented to the National Gallery by Mr. Ralph Cross Johnson, of Washington, followed by an editorial announcement of the separate organization of the National Gallery of Art, pp. 109–10.

LIBRARY—THE HUGHES ALCOVE.

Considerable advance was made during the year in the accumulation of an art library, numerous art books and art periodicals having been added to the publications previously acquired by the gallery. By the will of the Rev. Bruce Hughes, of Lebanon, Pa., who died on March 20, 1916, a sum estimated at about $9,000 was bequeathed to the institution, "the sum so received to be invested and the income alone used to found the Hughes Alcove of the said Smithsonian Institute." It is intended to devote this income to the interests of the National Gallery, as the Institution feels that the desire of the testator can most fittingly be accomplished by the establishment and maintenance of an alcove or section in the library of the gallery, for reference works on art which shall serve as a permanent memorial to the founder. No part of the fund has as yet been expended.

GALLERY HOUSING.

The national collection of art works so far as intrusted to the Smithsonian Institution, were first accommodated in the Smithsonian Building and later in the National Museum Building, now

the Museum of Arts and Industries. In 1910 they were transferred to the central sky-lighted hall of the recently erected Museum of Natural History. This hall was appropriately subdivided by partitions for the purpose. The space thus made available is, however, entirely inadequate to the actual needs of the gallery, and until an additional building is provided expansion must be at the further expense of the already seriously embarrassed natural history and associated departments.

The art collections are open to the public on every week day during the year, holidays included, from 9 o'clock a. m. to 4.30 o'clock p. m., and on Sundays from 1.30 to 4.30 p. m.

Respectfully submitted.

W. H. HOLMES,
Director, National Gallery of Art.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 3.

REPORT ON THE FREER GALLERY OF ART.

SIR: I have the honor to submit the first annual report on the Freer Gallery of Art, for the year ending June 30, 1921.

THE COLLECTION.

The entire Freer collection and all other objects delivered to the Smithsonian Institution, Freer Gallery of Art, by the executors of the will of Charles L. Freer, reached the building by November, 1920, and on June 15, 1921, receipt in full of all objects thus delivered was formally acknowledged by the Institution. The following list is offered as an indication of the nature and number of the objects received.

WORKS OF ART.

American.

By James McNeill Whistler:	
Drawings	117
Engravings (wood)	8
Etchings, including dry-points	683
Lithographs	194
Paintings—	
Oils	67
Watercolors	47
Pastels	40
Peacock room and 17 wainscot panels.	
Plates (copper)	38
By other artists:	
Paintings—	
Oils	96
Watercolors	6
Pastels	47
Silver-points	3
Pottery	84
Sculpture, bronze	2

Babylonian.

Metal work, bronze	1

Byzantine.

Crystal	1
Manuscripts, Greek Biblical, complete and fragmentary	29
Metal work, gold	8
Paintings, illustrations	10

Cambodian.

Ivory	6
Metal work, bronze	4

Chinese.

Furniture	22
Glass	14
Ivory, bone, horn, and mother-of-pearl	8
Jade and other hard stones	503
Lacquer	17
Metal work:	
Bronze	678
Iron	19
Pewter	8
Silver	20
Paintings	1,255
Pottery	481
Sculpture:	
Stone	183
Wood	13
Textiles	183

Cypriote.

Glass	1
Metal work, gold	1

Egyptian.

Glass	1,391
Ivory, bone	4
Metal work:	
Bronze	7
Gold	1
Pottery	254
Sculpture:	
Stone	34
Wood	6

Greek.

Metal work, bronze	2
Pottery	1

Italian.	
Furniture	1
Pottery	4
Textiles	1
Japanese.	
Lacquer	29
Metal work:	
Bronze	42
Iron	4
Silver	1
Paintings	804
Pottery	821
Print blocks (wood)	20
Sculpture:	
Stone	3
Wood	60
Textiles	79
Korean.	
Glass	7
Jade and other hard stones	4
Metal work:	
Bronze	189
Gold	6
Silver	2
Pottery	229
Sculpture, stone	14
Near Eastern and East Indian.	
Books, illustrated	18
Ivory	1
Metal work:	
Bronze	3
Silver	19
Paintings	139
Near Eastern and East Indian—Cont.	
Pottery	317
Textiles	16
Palmyran.	
Sculpture, stone	1
Tibetan.	
Paintings	18
Unclassified.	
Metal work	49
Pottery	10
Sculpture, stone	57
Textiles	11
Miscellaneous materials	50
STUDY ACCESSORIES.	
Dies	2
Electrotype plates	107
Library:	
Books	2,344
Manuscripts	3
Reproductions	170
Rubbings	222
Photographs:	
Lantern slides	3,179
Negatives	693
Print blocks (wood)	8
Whistleriana.—19 portraits of Whistler, reproductions, photographs, clippings, Whistler letters, and other documents.	
EQUIPMENT.	
Office, storage, and gallery furniture, etc	122

Work accomplished during the year includes unpacking and checking the collection and placing the objects in their respective storage spaces; examination and classification of the Japanese pottery and Chinese paintings; urgently needed restoration work on 27 oil paintings; renumbering, measuring and cataloguing of the entire collection. This latter task, though well under way, is by no means completed.

ACQUISITIONS BY PURCHASE.

Sculpture, stone:

Chinese, period of the Six Dynasties. Two large slabs carved in high relief with Buddhist scenes.

Chinese, T'ang? A tiger.

Photographic negatives—70, representing objects in the Freer collection.

BUILDING AND INSTALLATION.

The principal work accomplished during the year includes completion of certain electrical equipment and of gallery equipment such as register faces, pipe rails, and skylight glass; the installation of two additional lavatories and a carpenter's workshop; the provision of asbestos screens for the windows of the peacock room to prevent condensation of moisture on the glass; the building of partitions in

study room 2; the construction of storage cases for Chinese and Japanese panel pictures, for pottery, and for stone sculpture. Still under way is the rebuilding of the dais in gallery 18; the recoloring of the gallery walls throughout; the construction of storage bags and boxes for Japanese screens.

Early in June, the Institution formally and with certain reservations accepted the building from the architect, Mr. Charles A. Platt.

Thanks are due Mr. Stephen Warring, to whose care in packing and unpacking the collection may be attributed the transference of the whole from Detroit to the storages of the Freer Gallery without a mishap; Prof. Edward S. Morse for his expert opinion on the Japanese pottery; Mr. H. E. Thompson for his skillful work of restoration on the Whistler oil paintings; and, above all, Miss Rhoades and Miss Guest, both of the staff, without whose constant devotion to the Freer Gallery and its every interest, most of the progress here recorded would have been impossible.

Respectfully submitted.

J. E. LODGE,
Curator, Freer Gallery of Art.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 4.

EPORT ON THE BUREAU OF AMERICAN ETHNOLOGY.

SIR: In response to your request, I have the honor to submit the following report on the field researches, office work, and other operations of the Bureau of American Ethnology during the fiscal year ended June 30, 1921, conducted in accordance with the act of Congress approved June 5, 1920. The act referred to contains the following item:

> American ethnology: For continuing ethnological researches among the American Indians and the natives of Hawaii, including the excavation and preservation of archeologic remains, under the direction of the Smithsonian Institution, including necessary employees and the purchase of necessary books and periodicals, $44,000.

In the expenditure of this money the chief has tried to cover the field as economically as possible and to broaden the researches of the bureau staff in order to include as many stocks of Indians as the limited appropriation will allow. The science of ethnology is so comprehensive and its problems so numerous and intricate that to do this scientifically is extremely difficult. Work has been done on the Algonquian, Iroquois, various members of the Muskhogean stock, Kiowa, Pueblo, Osage, Pawnee, and others. The plan of work embraces many different aspects of the cultural life of the Indians, including their languages, social and religious customs, music, mythology, and ritual.

Researches have been made on the condition of the Indians in their aboriginal state before or directly after the advent of the Europeans, and the desire has been to increase the relative amount of field-work. Archeological explorations have been prosecuted in Texas, Missouri, Tennessee, Kentucky, Colorado, New Mexico, and the Hawaiian Islands. This line of study is destined to become the most popular in anthropology, and publications on the subject are always eagerly sought by the correspondents of the bureau.

To the development in recent years of the movement known as "See America First" we owe in part the creation of a bureau of the Department of the Interior called the National Park Service. Incidentally the movement has stimulated a desire for research in both ethnology and archeology. Several monuments and one national park have been set aside by presidential proclamation to preserve Indian relics which they contain. The main attractions of most of

these reserves are ancient buildings more or less dilapidated and buried underground, and to increase their educational value it is necessary that they be excavated under the supervision of men trained in the scientific methods of the archeologist. They should also be repaired by equally competent hands. This work is now being shared with other institutions, but it is desirable that the Bureau of American Ethnology should continue to occupy a very prominent place in this work, in which it was the pioneer, as its appropriation was made in part for this service.

While the majority of these monuments are prehistoric cliff dwellings or pueblos situated in our Southwest, there are others of equal interest in other parts of the country. For instance, among the most instructive of these monuments is the Kasaan Monument, an abandoned Haida village situated in Alaska. This village has many of the old totem poles, several "grave houses," and other buildings still standing, but rapidly going into ruin, liable to be destroyed by fire or by vandals. It is very desirable that steps should be taken to preserve this deserted town and that ethnological studies be made before these relics are lost to science. The bureau is also contributing its part, in an unobtrusive manner, in the efforts to preserve Cahokia, the largest aboriginal mound in North America.

In his previous reports the chief has annually called attention to the time consumed by the staff in answering correspondence asking information regarding American ethnology and related subjects. Some of these letters request elementary knowledge, others demand more or less research. Whether for the one or the other purpose, they often necessitate investigation and absorb considerable time, which tends to distract the attention of the experts from intensive scientific research, thus causing the scientific output to be reduced to a greater or less degree. The chief regards this aspect of the work of the bureau as a very important one and indicative of the respect in which the bureau is held by its correspondents. For this reason replies have been prepared with great care, so that they may be reliable and authoritative.

FIELD RESEARCHES OF THE STAFF.

Two members of the staff, the chief and Dr. Truman Michelson, engaged in field exploration at some time during the year.

During the past year the chief made three visits to the Mesa Verde National Park, Colo.; one in July and August and another in November, 1920. On the second visit he was the guest of Mr. Stephen T. Mather, Director of the National Park Service, Mr. F. A. Wadleigh, general passenger agent of the Denver & Rio Grande Railroad, and other gentlemen. The object of this visit was an inspection of past work in the park and formulation of plans for the future. The

rk in July and August was a continuation of cooperative work
:he Bureau of American Ethnology and the National Park Service,
:h an allotment by the latter for the excavation and repair of the
ns in the park. A third visit was made in May and June, 1921,
the expense of the bureau.

:n the report for 1920 attention was called to the beginning of the
rk of excavating a ruin known as Painted House, which is situated
ır the head of Fewkes Canyon, 2½ miles south of Spruce Tree
mp. The result of this work, which was not finished at the close
last year, intensified the suspicion that this large cliff building
s used for some communal purpose, and that it was connected with
: worship of fire. The further excavation of this ruin was con-
ıued in July, when the floor of a great court was laid bare, veri-
ing this suspicion and giving undoubted evidence of the existence
a large fireplace in the middle of the court. Taken in connection
th other evidence, the statement that this was a building devoted
fire worship is practically proven. Fire Temple, as it may be
signated, was completely excavated and its walls repaired. Lad-
rs were so placed as to make it accessible to the public.

To facilitate the opening of Fire Temple to visitors, a road was
nstructed along the southern rim of Fewkes Canyon, ending in
ıat is now called Sun Point, from which a magnificent view can be
tained of Sun Temple, Cliff Palace, and other important ruins of
e Mesa. The importance of this road is reflected by its popu-
:ity; it is now the most frequented road on the park. Its construc-
ın also opened to visitors two little-known ruins near Fire Temple,
e of which has been known for several years as Oak-tree House and
e other as Fire Temple House. The walls of the latter were deeply
ried but were completely excavated, bringing to light a most inter-
:ing cliff dwelling with kivas in a lower and storage rooms in an
ıper cave. A number of large ollas and a few unique specimens of
ack and white pottery and other artifacts were found in this ruin.
ıe indications are that this was the dwelling and granary of the
:w Fire clan or of the priests who controlled the ceremonies in the
ıre Temple. The ventilator of one kiva of this cliff dwelling re-
mbled those of Sun Temple.

Oak-tree House lies in a symmetrical cave in full sight of Sun
ɔint Road, about midway between Fire Temple and Sun Temple.
he excavation of this ruin, which has unique features, was com-
eted in September, and it is now in condition for inspection by
sitors. A trail was constructed along the top of the talus con-
ecting the ruins in Fewkes Canyon and ladders placed on the rim
: the canyon, making access to the ruins easy. These ladders follow
ıe Indian trails, formed of foot holes cut in the perpendicular walls
f the cliff.

One of the most interesting results of work in July, 1920, was the excavation of a tower situated in the cedars about a mile north of Spruce-tree Camp and described in 1892 by Baron G. Nordenskiöld. This tower, which will in the future be called Cedar-tree Tower, enlarges our knowledge of the use of towers, as it is a type of a large number of these structures found on the Mesa Verde and in McElmo and Yellowjacket Canyons. The special feature of this type before excavation is indicated by a saucer-like depression on the surface of the ground south of the walls above ground. The significance of this depression was unknown previously to the work here mentioned. It marks the existence of a circular subterranean kiva which once had a vaulted roof, and pilasters like those repeatedly described in cliff-house kivas. This tower was completely repaired and a road built around it to make it accessible to tourists.

In his field-work at Mesa Verde 30 years ago Baron Nordenskiöld, whose Cliff Dwellers of the Mesa Verde has become a classic, partially excavated a ruin in Soda Canyon about half a mile north of Cedar-tree Tower. The approach to this cliff dwelling was very difficult, but has been much improved by a trail constructed under the direction of the chief, making this ruin readily accessible, aided by several ladders where necessary.

The attractive feature of this ruin is a kiva, the inner wall of which still retains on its plastering decorations almost as brilliant as when they were first made. On this account "Ruin 9," as it was formerly called, will be referred to in the future as Painted Kiva House. The decoration consists of a red dado below and white above, with triangles in clusters of three at intervals on the upper border of the dado. These decorations are identical with those on the court and rooms of Fire Temple, and those used by the Hopi in decorating their walls 30 years ago. The row of dots which accompanies this mural decoration is also a common feature on the archaic black and white pottery from Step House, one of the most ancient cliff dwellings on the park.

Many specimens were found in Painted Kiva House, among which may be mentioned pottery, stone implements, metates, axes and celts, bone needles, fabrics, sandals and problematic wooden objects. Several ears of corn with kernels intact, seeds of squash and pumpkin, and abundant cornstalks and shucks left no doubt of the food of the inhabitants. A fragment of the so-called paper bread called by the Hopi piki, possibly over 500 years old, found at the bottom of an Oak-tree House kiva, allays any doubt on this point.

Future field-work on the Mesa Verde ought to be especially directed to the study of the relation of the Earth Lodge culture and that of the pueblo, in which is included the cliff dwellings and

pueblos on top of the mesa. Both are characterized by distinctive pottery as well as architecture, although the essential features of the former are not very well known. Aztec and the Chaco ruins have local differences from the Mesa Verde, but it is not known which area first lost its population. Both populations flourished at about the same time, and it is believed the cliff dwellings on the Mesa Verde were older than the community houses of the Chaco Canyon.

In May, 1921, the chief resumed his work on the Mesa Verde, remaining there until the close of the fiscal year. During this time he completed the excavation of Far View House, and protected with cement groat the tops of about two-thirds of all the walls of rooms.

About 385 feet north of Far View House, on higher land, in about the center of the cluster of 16 mounds that are included in the Mummy Lake group, the excavation of a most interesting building wholly buried under fallen walls was begun. Enough work was done to show that it is a remarkable type of building, consisting of a central circular tower with several subterranean rooms or kivas on the south side, overlooking a large cemetery. It has all the appearance of a necropolis of the cluster, and important results await its final excavation. Unfortunately work on this mound had to be suspended at the close of the fiscal year.

The Mummy Lake cluster of mounds is a typical village and is duplicated again and again on the mesa and the surrounding valleys. The complete village consists of buildings of several forms and functions, isolated or united, although the components are largely habitations of the unit type. Evidently the tower, with its accompanying kivas and cemetery, was the necropolis but not a habitation. The spade alone can divine the true meaning of members of this group.

In May the tops of all the walls of Sun Temple were recemented with groat to protect the walls from snow and rain, a work of no small magnitude.

During the entire year Mr. James Mooney, ethnologist, remained in the office, engaged in formulating replies to ethnologic inquiries and in digesting material from former western field seasons. No new material was collected or completed. His work during the winter was interrupted by a period of serious illness.

During the last fiscal year Dr. John R. Swanton, ethnologist, practically completed the proof reading of Bulletin 73, Early History of the Creek Indians and Their Neighbors, which is now going through the press. He also copied the Koasati texts which were collected a few years ago, and completed the extraction of words from these texts, of which a beginning was made last year.

Dr. Swanton has added a few hundred cards to his material bearing on the economic basis of American Indian life, and has gone over

Mr. James Murie's paper on the Ceremonies of the Pawnee twice, in order to make certain necessary changes in the phonetic symbols employed. He has also devoted some time to studies of the Alabama, Hitchiti, and Muskogee languages.

Dr. Swanton also continued the preparation of a paper on the Social Organization and Social Customs of the Indians of the Creek Confederacy, covering over 700 manuscript pages.

During the entire fiscal year Mr. J. N. B. Hewitt, ethnologist, was engaged in office work. His first work was devoted to the completion of the preparation by retyping of the Onondaga texts of the second part of the Iroquoian Cosmology, the first part having appeared in the Twenty-first Annual Report of the Bureau. Not only is the orthography of a large number of the native terms being standardized to conform in spelling with the other Iroquoian texts recorded by Mr. Hewitt but the statements and phrasing of numerous passages are also amplified or amended in such manner as to utilize information obtained by Mr. Hewitt since the recording of the original texts.

Mr. Hewitt also took advantage of the opportunity presented by the presence in Washington of Mr. George Gaboosa, a mixed-blood Chippewa Indian of Garden River, Ontario, Canada, who speaks both Chippewa and Ottawa dialects of Algonquian, by securing his aid in revising and translating a number of Ottawa texts supplied in 1900 by John Miscogeon, an Ottawa mixed-blood, then in Washington, D. C. These texts are either myths or traditions embodying myths. Mr. Gaboosa supplied the Chippewa versions of these stories. In addition to this work he supplied interlinear translations to all the texts. The following is a list of these texts: The Myth of Nanabozho's Mother; Living Men Visit the Sky-Land; The Myth of Summer and Winter; The Myth of Daylight-Maker, or Daymaker; The Myth of Nanabozho.

Mr. Hewitt is at work on some material relating to the general culture of the Muskhogean peoples, especially that relating to the Creeks and the Choctaw. In 1881–82 Maj. J. W. Powell began to collect and record this matter at first hand from Mr. L. C. Perryman and Gen. Pleasant Porter, both well versed in the native customs, beliefs, culture, and social organization of their peoples. Mr. Hewitt assisted in this compilation and recording. In this way he became familiar with this material, which was laid aside for lack of careful revision, and a portion of which has been lost; but as there is still much that is valuable and not available in print it was deemed wise to prepare the matter for publication, especially in view of the fact that the objective activities treated in these records no longer form a part of the life of the Muskhogean peoples, and so can not be obtained at first hand.

In addition to this material, it is designed to add as supplementary matter some Creek tales and mythic legends collected by Mr. Jeremiah Curtin.

The following brief list of topics treated may give some idea of the nature of these field notes: "Towns and clan lists," "Crime and murder," "The government of the clan," "The town government or organization of a town," "The council square," "The chief," "The system of councils," "The clan," "The ranks and the title of persons," "The busk or puskita," "Medicine practices," "Names and naming," "Festivals," "Marriage customs," "Insanity," "Prophets," "Souls or spirits," "Mythic notes," and the short list of tales collected by Mr. Curtin. Much of the material here recorded is not available either in any other manuscript or in print.

Mr. Francis La Flesche, ethnologist, devoted nearly all of his time to putting into book form his notes for the second volume of his work on the Osage tribe. This task was twice interrupted by the reading of the galley and the page proofs of the first volume.

The second volume is nearing completion and embraces two versions of an ancient rite entitled "No^{n}'-zhi^{n}-zho^{n} Wa-tho^{n}, Songs of the Rite of Vigil." Up to this date the completed part of this manuscript, exclusive of the illustrations, contains 582 typewritten pages.

Sho^{n}'-ge-mo^{n}-i^{n}, who gave the No^{n}'-zhi^{n}-zho^{n} ritual of his gens, the Ṭsi'-zhu Wa-shta-ge, died in the autumn of 1919. He was the fourth to die of the old men who aided in the recording of the ancient tribal rites of the Osage. Two old men died before the time set by them to give the ceremonials of their gentes arrived. Sho^{n}'-ge-mo^{n}-i^{e} remarked, as he was recording the child-naming ritual, to be published in a later volume, "The Osage people are fast dying out since they abandoned the supplicatory rites formulated by their ancestors."

The beginning of the fiscal year found Mr. J. P. Harrington, ethnologist, engaged in the preparation of his material on the language of the Kiowa Indians. The entire material was copied, collated, and analyzed, and constitutes a manuscript of more than 1,000 pages.

Kiowa is a typical Tano-Kiowan dialect, closely related in phonetics, vocabulary, and structure with the Tanoan languages of New Mexico. This proves again, as in the case of the Hopi, that culture areas cut across linguistic ones. The Tano-Kiowan is furthermore genetically related to the Keresan and Zuñian groups of New Mexico also to the Shoshonean, and certain languages of California. Mr. Harrington has in hand a comparative study of these languages which is very bulky.

Upon finishing the manuscript of the Kiowa paper, Mr. Harrington took up the Taos material, aided by a set of excellent texts dic-

tated by Mr. R. Vargas, and comprising 400 typewritten pages. He finished this for publication before the close of the fiscal year.

On July 1, 1920, Dr. Truman Michelson, ethnologist, was at Tama, Iowa, engaged in researches among the Sauk and Fox of that State and preparing for publication by the Bureau a manuscript entitled "The Autobiography of a Fox Indian Woman," as far as practical in the field. A good deal of the work on this had been done in the previous fiscal year. Near the close of July he left for Saskatchewan, Canada, where he made a reconnaissance of the Plains Cree at File Hills Agency. From this study it appears that physically the Plains Cree have a cephalic index of about 79, thus belonging to the so-called Mississippi Valley type of North American Indian, which confirms the results of Dr. Boas's work many years ago. Linguistically Cree clearly belongs to the central division of Algonquian languages, but it is not as archaic as has usually been believed. The folklore and mythology here show from an analysis of the culture cycle that both woodland and plains elements are to be found, as well as a few plateau elements. Ethnologically we have the same combination, save that plateau elements are lacking.

Dr. Michelson returned to Washington at the close of August, where he completed the autobiography mentioned above, and in January submitted the manuscript for publication by the bureau. The remainder of his time at Washington was spent working out English translations of various Fox texts written in the current syllabary on mortuary customs and observances, as well as one or two folk tales.

Dr. Michelson left Washington in the latter part of May, 1921, to renew his researches among the Sauk and Fox of Iowa. Arriving at Tama near the end of the month, Dr. Michelson spent nearly all his time on Fox mortuary customs and observances, mentioned above, with a view to their publication by the bureau. The Indian texts were restored phonetically, the translations corrected where needed, a grammatical analysis begun, and additional data secured, so that with the close of the fiscal year only about two weeks more field-work was necessary to complete the preparation of the volume so far as practical in the field. He took advantage of a favorable opportunity just before the end of the year to obtain data on the society called "Ki wa ka mo A ki."

While in the field and also in the office Dr. Michelson corrected proofs of Bulletin 72, The Owl Sacred Pack of the Fox Indians.

SPECIAL RESEARCHES.

Four manuscripts have been submitted during the year, entitled "Papago Songs," "Legend Music of the Papago," "Songs Connected With Expeditions to Obtain Salt," and "Viikita and Wakita Cere-

monies of the Papago." This material comprises 148 pages of text, 75 transcriptions of songs (with phonographic records and technical analyses), and 27 photographic illustrations.

Special researches in the field were conducted by Miss Frances Densmore, Mr. W. E. Myer, Prof. J. E. Pearce, Mr. Gerard Fowke, and Mr. J. A. Jeancon.

In September Miss Densmore resumed her work on Papago music, and in December, 1920, returned to the Papago Reservation in Arizona, where she had worked a few months previously. She revisited San Xavier, but her work centered at Sells, formerly called Indian Oasis, but now the location of the Papago agency. Trips were made from there to Santa Rosa village, in the extreme north, and to Vomari village in the extreme south of the reservation. Photographs, specimens, and records of songs were obtained at these places.

The principal subject of study at this time was the belief of the Papago in supernatural agencies controlling their food supply. Information was obtained regarding two ceremonies connected with this belief, i. e., the making and drinking of "cactus wine," and the Viikita. Numerous songs connected with these ceremonies were recorded.

Other classes of songs not previously recorded among the Papago were those received in dreams, those sung on expeditions to obtain salt, and those connected with stories told to children; also songs for success in the kicking-ball race and in hunting. Songs of war and of medicine were recorded, as well as others concerning the deeds of Elder Brother and including songs he was said to have sung after creating the spirits, winds, and clouds. Mention may be made of a song that was said to have been sung in order to produce the death of an aged woman. It was said that "her grandsons decided to kill her by means of a song," as her advanced age made her an incumbrance to them. Many songs have been recorded whose purpose was to procure health, but this is the first instance of a song intended to cause death. An important phase of the musical work was the hearing of a certain class of very old dance songs, a portion of which was in three parts, i. e., the voices of the men, the voices of the women singing the same melody an octave higher, and the voices of two or three women singing (for a brief period) a still higher part, different from the melody. This song was accompanied by the shaking of a gourd rattle and the striking of a basket drum, also by stamping the feet, which is the most primitive manner of marking time. This dance is seldom held at the present time, but was witnessed on the desert late Christmas night.

As a development of the year's work Miss Densmore notes the importance of recognizing estheticism as a factor in Indian music. Her analyses have shown the presence of tones whose interval distances

correspond to those of the first, second, third, and fourth upper partial tones of a fundamental. Thus, in a portion of his melody, the Indian appears to find satisfaction in intervals which are under natural laws. Apart from these tones and intervals it appears, from the evidence in hand, that his choice of tonal material is controlled by a sense of pleasure rather than by "keys" or "modes."

Miss Densmore continued work on her manuscript entitled "Chippewa Arts and Customs." Tabulations of the botanical portions of this book were made as follows: Lists of botanical names, with bibliography, showing the uses of these plants by other tribes; lists of plants used as food, dyes, charms, and for general utility. Miss Densmore made more than 100 blue prints of birch-bark transparencies, showing a wide variety of interesting patterns. These transparencies are made by folding thin birch bark and indenting it with the teeth, the bark, when unfolded and held toward the light, revealing the pattern. This form of Chippewa art is almost extinct at the present time.

In September and October Mr. W. E. Myer, of Nashville, Tenn., excavated, under the auspices of the bureau, Indian village sites on the Gordon farm near Brentwood, Davidson County, Tenn., and also the Fewkes Group at Boiling Spring Academy, Williamson County, in the same State. The remains of an old Indian town at the Gordon site had walls and towers very similar to those of Pacaha, visited by De Soto in 1541. The walls covered an area of 11.2 acres.

When the former inhabitants for some unknown reason abandoned this site they appear to have left nearly all the buildings still standing. The locality was never again occupied or disturbed, but gradually the buildings of the silent and deserted town decayed and whatever vestiges were not destroyed by the elements were slowly buried under a layer of black loam which is now from 14 to 20 inches deep.

In the course of time the site of the buried village gradually became a beautiful grassy glade set here and there with giant forest trees. The charm of the site appealed to one of the first white settlers, who built his home here and preserved the grassy glade for a lawn. No one suspected that an ancient Indian town was lying buried a few inches beneath the surface; but on the surface of this undisturbed lawn there were very faint saucer-shaped depressions and other evidences marking the sites of about 125 dwellings.

When the accumulated superficial black loam was removed from some of these circular depressions floors made of hard packed clay were brought to light. Some of these floors were very pleasing to the eye, being covered with a smoothed and polished coating of fine black, glossy material. The stone slab tops of the coffins of little children were exposed here and there projecting an inch or two above the level of the floor.

A building was uncovered in the center of which was an altar filled with the pure white ashes of the ancient perpetual fire. The neighboring buildings were dwellings with fire beds used for domestic cooking. Stone metates, mullers, and other utensils used for household purposes were likewise found on the floors of these rooms.

Mr. Myer also explored an unnamed group of five mounds and a surrounding village site at Boiling Spring Academy in Williamson County, Tenn. At the request of many citizens of Tennessee he gave this the name of Fewkes Group in honor of Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology, who had visited the site, recognized its importance, and caused it to be explored.

Archeological field-work was carried on by Prof. J. E. Pearce, of the University of Texas, in cooperation with the bureau. The area examined is situated in the vicinity of the city of Athens, in Henderson County, and during this work Prof. Pearce received many courtesies from Judge A. B. Watkins, who has long manifested an interest in the archeology of the region. Prof. Pearce finds that the eastern Texas region contains numerous mounds, village sites, and burial places, the objects from which are quite different from those found in the central and western portions of Texas. Three interesting mounds on the Morrall farm, 4 miles east of Cherokee County, were investigated. The highest of these mounds measures 80 feet across the base and 45 feet above the level of the base. The second mound is 180 feet long by 75 feet wide, but is only 15 feet high. Most of the mounds in the neighborhood of Athens have been plowed over and have no regularity in form. Several mounds situated in Harrison County, particularly those on the farm of Mr. Lane Mitchell, of Marshall, were examined and remains of earth lodges discovered, in the floor of which are central fire pits. These are probably recent. Numerous other sites were explored, yielding collections of pottery, stone implements, and other objects illustrating the life of the prehistoric aborigines of eastern Texas. Everything found implies that the Indians of this region lived in settled villages, were agriculturists, and made pottery of a high grade of excellence. Their culture was higher than that of the Indians who occupied the central region of Texas, investigated in 1919.

With a small allotment, Mr. J. A. Jeancon carried on important archeological work on a ruin at Llano, near Rancho de Taos, N. Mex., and obtained a valuable collection from a locality not represented in the Museum.

The architectural features and relations of the kiva and secular rooms of this ruin recall those of the cliff dwellings and pueblos of the Mesa Verde. The circular subterranean kiva that was excavated proved to be almost identical with a typical Mesa Verde kiva, veri-

fying the legends that the modern Taos Indians are a mixed type containing Pueblo elements, probably of northern origin.

This kiva was embedded in house walls not free from secular buildings as in modern Taos and showed evidences of two occupations, or one kiva built inside another. It had no pilasters for the support of a vaulted roof, but there were in the floor four upright posts upon which a flat roof formerly rested. In the floor was an excellent fireplace and a plastered pit the purpose of which is problematical.

Mr. Jeancon's work attracted wide attention, and many persons visited the site while he was at work. Members of the chamber of commerce in Taos declared their intention to protect the excavated walls by means of a shed.

The chief visited the ruin before excavation began and inspected the excavations after they had been completed.

Mr. Gerard Fowke represented the bureau at the meeting of the Pan Pacific Congress in Honolulu and made a special study of the archeology of the Hawaiian Islands. He found that all the aboriginal remains on the islands are the work of the present Hawaiian race, indicating that when the earliest of these people came there the islands were without inhabitants. No archeological evidences were found of any prehistoric population; and, so far as can be ascertained, excavations would not result in the discovery of any specimens essentially different from those that can be seen on the surface or may be found slightly covered by very recent natural accumulation. At the same time, as all the remains are well worthy of study and preservation, the islands furnish opportunity for further research. His report on the temples, terraces, and other remains has been received and awaits publication.

Dr. Clark Wissler has given what time he could spare from his duties as chairman of the division of anthropology and psychology of the National Research Council to the completion of a Pawnee manuscript, in which he has been aided by Mr. James R. Murie. The music necessary for this has been transcribed by Miss Helen Roberts, and Dr. John R. Swanton has also assisted in this work.

During the fiscal year Mr. D. I. Bushnell, jr., completed a manuscript bearing the title: "Villages of the Algonquian, Siouan, and Caddoan Tribes West of the Mississippi." While engaged in the preparation of this manuscript he also secured many notes on the burial customs of the same tribes, and these, together with much additional material, are being used in the preparation of another manuscript, entitled "Burials of the Algonquian, Siouan, and Caddoan Tribes West of the Mississippi."

Miss Mary Lois Kissell has begun the preparation of the manuscript of a bulletin on weaving of the Northwest Coast Indians, which

is hoped will be later followed by others on other geographical as.

A small allotment was given to Mr. Gerard Fowke to carry on cial archeological work in Greenup, Ky., near Portsmouth, Ohio, mounds figured and described by Squier and Davis and T. H. vis. On the opposite bank of the Ohio River a celebrated cache pipes has been found, and it was hoped that a similar deposit ght be discovered near the effigy mound on the south side. The ults of this examination are negative so far as the object desired s concerned, but resulted in several interesting observations of a ure too technical to discuss in this place.

EDITORIAL WORK AND PUBLICATIONS.

The editing of the publications of the bureau was continued ough the year by Mr. Stanley Searles, assisted by Mrs. Frances Nichols. The status of the publications is presented in the fol- ving summary:

PUBLICATIONS ISSUED.

letin 67. Alsea Texts and Myths (Frachtenberg). 304 pp.
letin 71. Native Cemeteries and Forms of Burial East of the Mississippi (Bushnell). 160 pp., 17 pl.
letin 72. The Owl Sacred Pack of the Fox Indians (Michelson). 83 pp., 4 pl.
t of Publications of the Bureau of American Ethnology. 44 pp.

PUBLICATIONS IN PRESS OR IN PREPARATION.

irty-fourth Annual Report. Accompanying paper: A Prehistoric Island Culture Area of America (Fewkes).
irty-fifth Annual Report.—Accompanying paper: Ethnology of the Kwakiutl (Boas).
irty-sixth Annual Report. Accompanying paper: The Osage Tribe: Rite of the Chiefs; Sayings of the Ancient Men (La Flesche).
irty-seventh Annual Report. Accompanying paper: The Winnebago Tribe (Radin).
irty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians (Roth).
letin 73. Early History of the Creek Indians and Their Neighbors (Swanton).
letin 74. Excavation of a Site at Santiago Ahuitzotla, D. F. Mexico (Tozzer).
letin 75. Northern Ute Music (Densmore).
letin 76. Archeological Excavations in the Ozark Region of Central Missouri (Fowke).
letin 77. Villages of the Algonquian, Siouan, and Caddoan Tribes West of the Mississippi (Bushnell).
letin —. Handbook of the Indians of California (Kroeber).
letin —. Mandan and Hidatsa Music (Densmore).

DISTRIBUTION OF PUBLICATIONS.

The distribution of publications has been continued under the immediate charge of Miss Helen Munroe, assisted by Miss Emma B. Powers. Publications were distributed as follows:

	Copies.
Annual reports and separates	1,998
Bulletins and separates	10,288
Contributions to North American Ethnology	34
Miscellaneous publications	475
Total	12,795

ILLUSTRATIONS.

Mr. De Lancey Gill, illustrator, with the assistance of Mr. Albert E. Sweeney, continued the preparation of the illustrations of the bureau. A summary of this work follows:

Photographic illustrations for distribution and office use	645
Negatives of ethnological and archeological subjects	351
Negative films developed from field exposures	70
Photostat prints made from books and manuscripts	120
Illustrations prepared and submitted for publication	391
Line and color drawings	195
Illustrations proofs edited	158
Lithographic proofs examined at Government Printing Office	25,000

LIBRARY.

The reference library continued in the immediate care of Miss Ella Leary, librarian, assisted by Mr. Charles B. Newman and Mr. Samuel H. Miller.

During the year 775 books were accessioned, of which 50 were acquired by purchase, 325 by binding of periodicals, and 400 by gift and exchange. The periodicals currently received number about 900, of which 30 were received by subscription, the remainder being received through exchange. The bureau has also received 269 pamphlets, giving at the close of the year a working library of 24,155 volumes, 14,777 pamphlets, and several thousand unbound periodicals.

During the year an increasing number of visitors have applied to the library for books. Information has been furnished and bibliographic notes compiled for the use of correspondents. The officials of the Library of Congress and of the Government departments have also made use of the library through frequent loans during the year.

In addition to the use of its own library, which is becoming more and more valuable through exchange and by limited purchase, it was found necessary to draw on the Library of Congress for the loan of about 500 books.

As mentioned in the last annual report, one of the most urgent needs of the library at the present time is more shelf room for its books.

COLLECTIONS.

The following collections, acquired by members of the bureau or by those detailed in connection with its researches, have been transferred to the United States National Museum:

Stone arrow polisher, presented to the bureau by Dr. Walter E. Roth, of Georgetown, British Guiana. (65625.)

Collection of archeological material, collected in the spring of 1920 in northwestern Arizona and southwestern Utah by Mr. Neil M. Judd. (65764.)

Pseudo stone implement, found by Rev. E. N. Kremer near Camphill, Cumberland County, Pa. (65795.)

Three human skulls and bones, collected by Dr. J. Walter Fewkes at Fire Temple Group, Mesa Verde National Park, Colo. (66011.)

Skeletons collected during the summer of 1920 near Nashville, Tenn., by Mr. W. E. Myer. (65115.)

Archeologica and skeleton, collected by Mr. J. A. Jeancon from a ruin near Taos, N. Mex., in the summer of 1920. (66156.)

Archeologica and human bones, found at Indian H ll, Fla., by Mr. Charles T. Earle. (65551.)

Skull bones and lower jaw, found at village site near Gatesville, Tex., by Prof. J. E. Pearce. (65334.)

PROPERTY.

Furniture and office equipment were purchased to the amount of $140.83.

MISCELLANEOUS.

Clerical.—The correspondence and other clerical work of the office has been conducted by Miss May S. Clark, clerk to the chief. Mrs. Frances S. Nichols assisted the editor. Mr. Anthony Wilding served as messenger and typist to the chief.

Personnel.—Mr. Samuel H. Miller has been appointed to assist Miss Leary in the library in place of Mr. Charles B. Newman, transferred to the Smithsonian.

Mr. J. A. Jeancon, who served as assistant to the chief in the work at Mesa Verde, was later appointed temporary ethnologist, but at the close of two months' work in Washington, resigned to accept a position in the State Historical Museum, Denver, Colo.

Respectfully submitted.

J. WALTER FEWKES,
Chief, Bureau of American Ethnology.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 5.

REPORT ON THE INTERNATIONAL EXCHANGES.

SIR: I have the honor to submit the following report on the operations of the International Exchange Service during the fiscal year ending June 30, 1921:

The estimate submitted for the support of the service during 1921, including the allotment for printing and binding, was $50,200, and this amount was granted by Congress. The repayments from departmental and various other establishments aggregated $4,779.47, making the total resources available for carrying on the system of exchanges during the year $54,979.47.

The work of the exchange service during the past year has been very heavy, due, principally, to the reopening of relations with Germany. One hundred and eighty-eight boxes were received from Germany and 691 boxes were forwarded to that country. These consignments weighed a total of 186,037 pounds, or about 31 per cent of the weight of all the packages handled by the exchange service during the year.

The total number of packages passing through the service during the year was 451,471—an increase over the number for the preceding year of 82,099. The weight of these packages was 605,312 pounds—a gain of 108,934. For statistical purposes the packages handled by the exchange service are divided into several classes.

The number and weight of the packages of different classes are indicated in the following table:

	Packages.		Weight.	
	Sent.	Received.	Sent.	Received.
			Pounds.	*Pounds.*
United States parliamentary documents sent abroad	147,133	.....	72,549	.....
Publications received in return for parliamentary documents	.....	1,419	.....	6,268
United States departmental documents sent abroad	175,007	.....	243,288	.....
Publications received in return for departmental documents	.....	5,591	.....	9,747
Miscellaneous scientific and literary publications sent abroad	90,014	.....	181,575	.....
Miscellaneous scientific and literary publications received from abroad for distribution in the United States	.....	32,307	.....	91,885
Total	412,154	39,317	497,412	107,900
Grand total	451,471		605,312	

xplained in previous reports, the disparity between the number blications sent abroad and those received in return is not so as would appear from the above figures. Packages sent abroad ny instances contain only a single publication, while those re- in return often comprise several volumes—in some cases rm " package " being applied to large boxes containing a hun- or more publications. Furthermore, some foreign establish- send their publications directly to their destinations in this ry by mail and not through exchange channels.

I have already stated, shipments were resumed during the year rmany. Relations have also been reestablished with Austria. steps taken by the Institution toward the reopening of ex- es with Roumania and the establishment of relations with the formed Government of Jugoslavia, referred to in my last re- have not yet led to a successful result. The Roumanian au- ies state that, in view of the difficulties of railroad transporta- the service can not at the present time be reorganized, but as as those difficulties are overcome the Roumanian Government t once resume the service. The Government of Jugoslavia, in e received near the close of the year, states that it will be glad new the interchange of publications as soon as the Belgrade ange Bureau is reorganized. Conditions in Russia and Turkey not yet reached a state where steps can be taken to renew the nge of publications between those countries and the United s.

ference was made in my 1920 report to the fact that an exchange blications had been inaugurated with the Czechoslovak Repub- As a matter of record it should be stated here that notification eceived through the Department of State from the Belgian ssador in Washington of the adherence of the Government of oslovakia to the exchange conventions concluded at Brussels on h 15, 1886. One of those conventions provides for the inter- nal exchange of official documents and scientific and literary cations; the other, for the immediate exchange of the official al, parliamentary annals, and documents. Articles II and IX e conventions provide that the States which have not taken part e convention are admitted to adhere to it on their request, this ence to be notified diplomatically to the Belgian Government y that Government to all the other signatory States.

m glad to report that the Polish Government has also adhered e Brussels convention providing for the establishment of a sys- f international exchanges and that the Bibliothèque du Minis- les Relations Extérieures, at Warsaw, has been designated to e charge of the Polish International Exchange Service. Under

date of May 14, 1921, the first shipment, consisting of 18 boxes, was dispatched to Poland.

The Government of the free city of Danzig, in reply to a letter from this Institution asking whether it would be willing to undertake the distribution of packages intended for correspondents in the territory comprising that city, stated that the Stadtbibliothek has been designated to act as its exchange bureau.

Among the requests received from foreign establishments for assistance in procuring especially desired publications may be mentioned one from the Société Belge d'Etudes et d'Expansion at Liége. That society stated that having in view a closer relationship between its peoples and the nationals of friendly and allied countries, it had established a new service of general documentation, and was anxious to receive for the use of that service publications which would tend to make the United States better known in the Kingdom of Belgium. The Institution procured for the Society of Studies and Expansion from the various bureaus of this Government such publications as it was thought would answer the purpose in question.

Last year mention was made of the fact that a shipment weighing over 25,000 pounds had been made to the library of the University of Louvain, and that that consignment was the largest single shipment ever forwarded through the Smithsonian Exchange Service to one address at one time. While that statement still holds good, it might be of interest to note here that during the last three months of the current fiscal year three shipments were made to the German Exchange Agency for distribution to various addresses throughout Germany which weighed over 30,000 pounds each. These shipments, as I have mentioned in the foregoing part of this report, were made up of exchanges suspended during the war.

During the year 2.752 boxes were used in forwarding exchanges to foreign agencies for distribution, being an increase of 393 over the number for the preceding 12 months. This is the largest number of boxes shipped abroad through the exchange service in one year, being about 300 more than are handled during a normal year. It is, of course, due to the accumulations received for the countries with which exchange relations were resumed. The gross weight of the boxes forwarded abroad aggregated a total of 546,279 pounds, being an increase of 81,093 pounds over the preceding year.

Of the total number of boxes sent abroad, 383 contained full sets of United States official documents for authorized depositories and 2,369 included departmental and other publications for depositories of partial sets and for miscellaneous correspondents.

The number of boxes sent to each country is given in the following table:

Consignments of exchanges for foreign countries.

Country.	Number of boxes.	Country.	Number of boxes.
.....	58	Jamaica.....	5
.....	99	Japan.....	54
.....	1	Korea.....	2
.....	142	Netherlands.....	77
.....	8	New South Wales.....	22
.....	37	New Zealand.....	25
s.....	25	Nicaragua.....	2
.....	5	Norway.....	36
.....	8	Paraguay.....	7
.....	20	Peru.....	16
.....	22	Poland.....	18
.....	105	Portugal.....	18
.....	13	Queensland.....	15
.....	11	Salvador.....	2
.....	5	Siam.....	5
.....	104	South Australia.....	16
.....	32	Spain.....	63
.....	9	Sweden.....	58
.....	9	Switzerland.....	14
.....	16	Tasmania.....	29
.....	218	Trinidad.....	2
.....	691	Union of South Africa.....	36
nd Ireland.....	331	Uruguay.....	16
.....	12	Venezuela.....	11
.....	2	Victoria.....	30
.....	2	Western Australia.....	14
.....	27		
.....	41	Total.....	2,752
.....	106		

GN DEPOSITORIES OF UNITED STATES GOVERNMENTAL DOCUMENTS.

rdance with the terms of a convention concluded at Brussels , 1886, and under authority granted by Congress in resolu- roved March 2, 1867, and March 2, 1901, there are now sent he exchange service regularly to depositories abroad 57 of United States official documents and 39 partial sets— aving been added during the year to the list of those coun- ving full sets, and Latvia and the Library of the League of ocated in Geneva, Switzerland, to the list of those receiving ts. The number of full and partial sets now being sent will be seen, is 96. The total number provided by law for f the Library of Congress and for international exchange

ll set of documents sent to Poland is deposited in the que du Ministère des Relations Extérieures, Warsaw. The

partial set for Latvia is deposited in the office of the prime minister at Riga.

I stated last year that it was understood that the Czechoslovak depository would be the Ministère de l'Instruction Publique, at Prague. Information has since been received from the Government of Czechoslovakia to the effect that the United States official documents would be deposited in the Bibliothèque de l'Assemblée Nationale in Prague.

A complete list of the depositories is given below:

DEPOSITORIES OF FULL SETS.

ARGENTINA: Ministerio de Relaciones Exteriores, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Statistische Zentral-Kommission, Vienna.
BADEN: Universitäts-Bibliothek, Freiburg. (Depository of the State of Baden.)
BAVARIA: Staats-Bibliothek, Munich.
BELGIUM: Bibliothèque Royale, Brussels.
BRAZIL: Bibliotheca Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca de la Universidad Nacional de La Plata. (Depository of the Province of Buenos Aires.)
CANADA: Library of Parliament, Ottawa.
CHILE: Biblioteca del Congreso Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
COLOMBIA: Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA: Secretaria de Estado (Asuntos Generales y Canje Internacional), Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Kongelige Bibliotheket, Copenhagen.
ENGLAND: British Museum, London.
FRANCE: Bibliothèque Nationale, Paris.
GERMANY: Deutsche Reichstags-Bibliothek, Berlin.
GLASGOW: City Librarian, Mitchell Library, Glasgow.
GREECE: Bibliothèque Nationale, Athens.
HAITI: Secrétaire d'État des Relations Extérieures, Port au Prince.
HUNGARY: Hungarian House of Delegates, Budapest.
INDIA: Imperial Library, Calcutta.
IRELAND: National Library of Ireland, Dublin.
ITALY: Biblioteca Nazionale Vittorio Emanuele, Rome.
JAPAN: Imperial Library of Japan, Tokyo.
LONDON: London School of Economics and Political Science. (Depository of the London County Council.)
MANITOBA: Provincial Library, Winnipeg.
MEXICO: Instituto Bibliográfico, Biblioteca Nacional, Mexico.
NETHERLANDS: Bibliotheek van de Staten-Generaal, The Hague.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Storthingets Bibliothek, Christiania.
ONTARIO: Legislative Library, Toronto.
PARIS: Préfecture de la Seine.

GREAT BRITAIN: Library of the Foreign Office, Downing Street, London, S. W. 1.
GREECE: Library of Parliament, Athens.
GUATEMALA: Biblioteca de la Oficina Internacional Centro-Americana, 8a Calle Poniente No. 1, Ciudad de Guatemala.
HONDURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
HUNGARY: Bibliothek des Abgeordnetenhauses, Budapest.
ITALY:
Biblioteca della Camera dei Deputati, Palazzo di Monte Citorio, Rome.
Biblioteca del Senato del Regno. Palazzo Madama, Rome.
LIBERIA: Department of State, Monrovia.
JUGOSLAVIA: Library of the Skupshtina, Belgrade.
NEW SOUTH WALES: Library of Parliament, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
PERU: Câmara de Diputados, Congreso Nacional, Lima.
POLAND: Monsieur le Ministre des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca das Cortes, Lisbon.
PRUSSIA: Bibliothek des Abgeordnetenhauses, Prinz-Albrechtstrasse 5, Berlin, S. W. 11.
QUEENSLAND: The Chief Secretary's Office, Brisbane.
ROUMANIA: Bibliothèque de la Chambre des Députés, Bucharest.
RUSSIA: Sendings temporarily suspended.
SPAIN:
Biblioteca del Congreso de los Diputados, Madrid.
Biblioteca del Senado, Madrid.
SWITZERLAND: Bibliothèque de l'Assemblée Fédérale Suisse, Berne.
TRANSVAAL: State Library, Pretoria.
UNION OF SOUTH AFRICA: Library of Parliament, Cape Town.
URUGUAY: Biblioteca de la Câmara de Representantes, Montevideo.
VENEZUELA: Câmara de Diputados, Congreso Nacional, Carácas.
WESTERN AUSTRALIA: Library of Parliament of Western Australia, Perth.

It will be noted from the above list that there are at present 38 different foreign States or Provinces with which the immediate exchange of the official journal is carried on. To some two copies of the Congressional Record are forwarded—one to the Upper and one to the Lower House of Parliament—the total number transmitted being 43. The number provided by law for this exchange is limited to 100.

FOREIGN EXCHANGE AGENCIES.

Agencies have been established during the year by the Governments of Danzig and Poland. Shipments to Czechoslovakia were inaugurated last year, consignments being sent to the Ministère de l'Instruction Publique. The Czechoslovak Government has since established an international exchange service under the direction of the Bibliothèque de l'Assemblée Nationale.

A complete list of the foreign exchange agencies or bureaus is given below:

ALGERIA, *via* France.
ANGOLA, *via* Portugal.
ARGENTINA: Comisión Protectora de Bibliotecas Populares, Lavalle 1216, Buenos Aires.

NICARAGUA: Superintendente de Archivos Nacionales, Managua.
NORTHWEST TERRITORIES: Government Library, Regina.
NOVA SCOTIA: Provincial Secretary of Nova Scotia, Halifax.
PANAMA: Secretaria de Relaciones Exteriores, Panama.
PARAGUAY: Oficina General de Inmigracion, Asuncion.
PRINCE EDWARD ISLAND: Legislative Library, Charlottetown.
ROUMANIA: Academia Romana, Bucharest.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SIAM: Department of Foreign Affairs, Bangkok.
STRAITS SETTLEMENTS: Colonial Secretary, Singapore.
SWITZERLAND: Library of the League of Nations, Palace of Nations, Quai de Leman, Geneva.
UNITED PROVINCES OF AGRA AND OUDH: Undersecretary to Government, Allahabad.
VIENNA: Bürgermeister-Amt der Stadt Wien.

INTERPARLIAMENTARY EXCHANGE OF OFFICIAL JOURNALS.

The interparliamentary exchange is separate and distinct from the exchange of official documents referred to above and is carried on by this Institution in behalf of the United States Government in accordance with authority granted in a resolution of Congress approved March 4, 1909, the purpose of that resolution being to carry into effect the provisions of the second convention, concluded at Brussels March 15, 1886, providing for the immediate exchange of the official journal as well as of the parliamentary annals and documents, to which the United States was one of the signatories.

While the Government of Poland has not signified its adherence to the above-mentioned convention, it has entered into the immediate exchange with the United States.

A complete list of the countries now taking part in this exchange is given below, together with the names of the establishments to which the daily issue of the Congressional Record is forwarded:

ARGENTINA: Biblioteca del Congreso Nacional, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bibliothek des Nationalrates, Wien I.
BADEN: Universitäts-Bibliothek, Heidelberg.
BELGIUM: Bibliothèque de la Chambre des Représentants, Brussels.
BOLIVIA: Câmara de Diputados, Congreso Nacional, La Paz.
BRAZIL: Bibliotheca do Congresso Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca del Senado de la Provincia de Buenos Aires, La Plata.
CANADA:
Library of Parliament, Ottawa.
Clerk of the Senate, Houses of Parliament, Ottawa.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA:
Biblioteca de la Câmara de Representantes, Habana.
Biblioteca del Senado, Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Rigsdagens Bureau, København.
FRANCE:
Bibliothèque de la Chambre des Députés, au Palais Bourbon, Paris.
Bibliothèque du Sénat, au Palais du Luxembourg, Paris.

GREAT BRITAIN: Library of the Foreign Office, Downing Street, London, S. W. 1.
GREECE: Library of Parliament, Athens.
GUATEMALA: Biblioteca de la Oficina Internacional Centro-Americana, 8a Calle Poniente No. 1, Ciudad de Guatemala.
HONDURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
HUNGARY: Bibliothek des Abgeordnetenhauses, Budapest.
ITALY:
Biblioteca della Camera dei Deputati, Palazzo di Monte Citorio, Rome.
Biblioteca del Senato del Regno, Palazzo Madama, Rome.
LIBERIA: Department of State, Monrovia.
JUGOSLAVIA: Library of the Skupshtina, Belgrade.
NEW SOUTH WALES: Library of Parliament, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
PERU: Cámara de Diputados, Congreso Nacional, Lima.
POLAND: Monsieur le Ministre des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca das Cortes, Lisbon.
PRUSSIA: Bibliothek des Abgeordnetenhauses, Prinz-Albrechtstrasse 5, Berlin, S. W. 11.
QUEENSLAND: The Chief Secretary's Office, Brisbane.
ROUMANIA: Bibliothèque de la Chambre des Députés, Bucharest.
RUSSIA: Sendings temporarily suspended.
SPAIN:
Biblioteca del Congreso de los Diputados, Madrid.
Biblioteca del Senado, Madrid.
SWITZERLAND: Bibliothèque de l'Assemblée Fédérale Suisse, Berne.
TRANSVAAL: State Library, Pretoria.
UNION OF SOUTH AFRICA: Library of Parliament, Cape Town.
URUGUAY: Biblioteca de la Cámara de Representantes, Montevideo.
VENEZUELA: Cámara de Diputados, Congreso Nacional, Carácas.
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A complete list of the foreign exchange agencies or bureaus is given below:

ALGERIA, *via* France.
ANGOLA, *via* Portugal.
ARGENTINA: Comisión Protectora de Bibliotecas Populares, Lavalle 1216, Buenos Aires.

AUSTRIA: Statistische Zentral-Kommission, Vienna.
AZORES, *via* Portugal.
BELGIUM: Service Belge des Echanges Internationaux, Rue des Longs-Chariots 46, Brussels.
BOLIVIA: Oficina Nacional de Estadística, La Paz.
BRAZIL: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Rio de Janeiro.
BRITISH COLONIES: Crown Agents for the Colonies, London.
BRITISH GUIANA: Royal Agricultural and Commercial Society, Georgetown.
BRITISH HONDURAS: Colonial Secretary, Belize.
BULGARIA: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
CANARY ISLANDS, *via* Spain.
CHILE: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
COLOMBIA: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CZECHOSLOVAKIA: Service Tchécoslovaque des Echanges Internationaux, Bibliothèque de l'Assemblée Nationale, Prague 1–79.
DANZIG: Stadtbibliothek, Danzig.
DENMARK: Kongelige Danske Videnskabernes Selskab, Copenhagen.
DUTCH GUIANA: Surinaamsche Koloniale Bibliotheek, Paramaribo.
ECUADOR: Ministerio de Relaciones Exteriores, Quito.
EGYPT: Government Publications Office, Printing Department, Bulaq, Cairo.
FINLAND: Delegation of the Scientific Societies of Finland, Helsingfors.
FRANCE: Service Français des Échanges Internationaux, 110 Rue de Grenelle, Paris.
GERMANY: Amerika-Institut, Universitätstrasse 8, Berlin, N. W. 7.
GREAT BRITAIN AND IRELAND: Messrs. Wheldon & Wesley, 28 Essex Street, Strand, London.
GREECE: Bibliothèque Nationale, Athens.
GREENLAND, *via* Denmark.
GUADELOUPE, *via* France.
GUATEMALA: Instituto Nacional de Varones, Guatemala.
GUINEA, *via* Portugal.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
HONDURAS: Biblioteca Nacional, Tegucigalpa.
HUNGARY: Dr. Julius Pikler, Fővárosi Telekértéknyilvántartó Hivatal (City Land Valuation Office), Központi Városház, Budapest IV.
ICELAND, *via* Denmark.
INDIA: Superintendent of Stationery, Bombay.
ITALY: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio Emanuele, Rome.
JAMAICA: Institute of Jamaica, Kingston.
JAPAN: Imperial Library of Japan, Tokyo.
JAVA, *via* Netherlands.
KOREA: Government General, Keijo.
LIBERIA: Bureau of Exchanges, Department of State, Monrovia.
LOURENÇO MARQUEZ: Government Library, Laurenço Marquez.
LUXEMBURG, *via* Germany.
MADAGASCAR, *via* France.
MADEIRA, *via* Portugal.

MOZAMBIQUE, *via* Portugal.
NETHERLANDS: Bureau Scientifique Central Néerlandais, Bibliothèque de l'Académie technique, Delft.
NEW GUINEA, *via* Netherlands.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: Dominion Museum, Wellington.
NICARAGUA: Ministerio de Relaciones Exteriores, Managua.
NORWAY: Kongelige Norske Frederiks Universitet Bibliotheket, Christiania.
PANAMA: Secretaria de Relaciones Exteriores, Panama.
PARAGUAY: Servicio de Canje Internacional de Publicaciones, Sección Consular y de Comercio, Ministerio de Relaciones Exteriores, Asuncion.
PERU: Oficina de Reparto, Depósito y Canje Internacional de Publicaciones, Ministerio de Fomento, Lima.
POLAND: Bibliothèque du Ministère des Relations Extérieures, Warsaw.
PORTUGAL: Secção de Trocas Internacionaes, Bibliotheca Nacional, Lisbon.
QUEENSLAND: Bureau of Exchanges of International Publications, Chief Secretary's Office, Brisbane.
RUMANIA: Shipments temporarily suspended.
RUSSIA: Shipments temporarily suspended.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SIAM: Department of Foreign Affairs, Bangkok.
SOUTH AUSTRALIA: Public Library of South Australia, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SUMATRA, *via* Netherlands.
SWEDEN: Kongliga Svenska Vetenskaps Akademien, Stockholm.
SWITZERLAND: Service des Échanges Internationaux, Bibliothèque Fédérale Centrale, Berne.
SYRIA: American University of Beirut.
TASMANIA: Secretary to the Premier, Hobart.
TRINIDAD: Royal Victoria Institute of Trinidad and Tobago, Port-of-Spain.
TUNIS, *via* France.
TURKEY: Shipments temporarily suspended.
UNION OF SOUTH AFRICA: Government Printing Works, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional, Montevideo.
VENEZUELA: Biblioteca Nacional, Caracas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
WINDWARD AND LEEWARD ISLANDS: Imperial Department of Agriculture, Bridgetown, Barbados.

In conclusion, I beg to express my appreciation of the conscientious attention to duty by the employees of the Exchange Office, without which it would not have been possible to handle the large volume of work passing through the service during the year.

Respectfully submitted.

C. G. ABBOT,
Assistant Secretary,
In Charge of Library and Exchanges.

Dr. CHARLES D. WALCOTT,
Secretary of the Smithsonian Institution.

APPENDIX 6.

REPORT ON THE NATIONAL ZOOLOGICAL PARK.

SIR: I have the honor to present the following report on the operations of the National Zoological Park for the fiscal year ending June 30, 1921:

The appropriations allowed by Congress in the sundry civil act included $125,000 for the regular maintenance of the park, $80,000 for the purchase of additional land, and $200 for miscellaneous printing and binding.

Prices on almost all necessary supplies remained high during the early months of the year and, as a consequence, only very limited funds were available for repairs or permanent improvements. In the later months there was a decided drop in the prices of several items of food for animals, and particularly in forage, so that a few long-delayed repairs and improvements, some of them begun five years ago but discontinued for lack of funds, could be undertaken.

The number of animals on exhibition is greater than at any period since 1912; the number of species represented is greater than ever before; and the scientific importance and actual monetary value of the collections far exceed any previous year in the history of the park. A new record for attendance was also reached, due in a measure to the recent rapid development of near-by residential sections, but in a greater measure due to increased interest by the public in the animal collections and in the recreational features offered by such an establishment.

ACCESSIONS.

Gifts.—An unusual number of animals were added to the collection as gifts, or were placed by friends of the park on indefinite deposit. The total number of specimens received in this manner was 178, and the donations included numerous rare and important species.

Mr. Isaac Ellison, of Singapore, presented to the park a fine young male orang-utan, about 3½ years old. No specimen of this ape had been on exhibition in Washington for many years, and the addition to the collection of an example so thrifty is gratifying. Mr. Ellison brought the orang-utan, together with a Javan macaque, with him from Singapore, while on a visit to America.

The Canadian Government, through Mr. J. B. Harkin, Commissioner of Dominion Parks, presented four mountain goats and two

Rocky Mountain sheep, all captured in the Rocky Mountains Park and shipped from Banff, Alberta. The sheep, both ewes, are most welcome additions to the small herd received from the same source in 1917, which has done so well in our paddocks. The mountain goats are the first on exhibition here in many years, and in the large range prepared especially for them have attracted great attention. A young male, born here May 20, 1921, appears to be a thrifty animal.

Mr. Victor J. Evans, of Washington, D. C., who has for many years taken great interest in the National Zoological Park, and has, from time to time, added many rare and unusual animals to the collection, presented during the year a young male Kadiak bear, a pair of Count Raggi's birds of paradise, and some valuable parrots. The bear gives promise of becoming an exceptionally large individual, and no species of bird of paradise has before been shown in the park.

Four shipments from tropical America added, by gift, a number of species new to the collections. Dr. F. W. Goding, American consul general at Guayaquil, Ecuador, transmitted specimens of the giant Galapagos tortoise, one each from Albemarle Island and Indefatigable Island. The Indefatigable Island species is very rare and had never before been on exhibition. Hon. Henry D. Baker, American consul at Trinidad, British West Indies, sent specimens of the Trinidad brocket deer and agouti. Mr. Stuart H. Gillmore and Mr. Walter C. B. Morse, of Washington, brought with them from Surinam a small collection of animals, including specimens of the golden-hooded oriole and weeping capuchin. Dr. Paul Bartsch, of the National Museum, collected and presented four large ground iguanas from Andros Island and an additional specimen of the great white heron from the Florida Keys.

Mr. A. K. Haagner, director of the zoological garden at Pretoria, South Africa, brought to America, as a gift to the park, a specimen of his recently discovered Rhodesian baboon.

Seventy-two individual donors contributed to the collection during the year. The complete list is as follows:

Mr. H. E. Allen, Washington, D. C., red-and-blue-and-yellow macaw.
Dr. Wade H. Atkinson, Washington, D. C., Virginia opossum.
Mr. Carl Aylor, Washington, D. C., screech owl.
Miss Henriette A. Bagnell, Washington, D. C., two grass paroquets.
Hon. Henry D. Baker, Trinidad, British West Indies, Trinidad brocket and two Trinidad agoutis.
Dr. Paul Bartsch, Washington, D. C., white heron and four ground iguanas.
Miss Dorothy Beers, Washington, D. C., alligator.
Mr. Harmon B. Bell, jr., Ruxton, Md., alligator.
Mr. I. E. Bennett, West Palm Beach, Fla., laughing gull.
Mr. K. M. Bradshaw, Bristow, Va., barn owl.
Ensign Richard H. Brazeal, U. S. S. *Penguin*, San Francisco, Calif., Panama agouti.
Mr. F. E. Briggs, Bristow, Va., great horned owl.

Miss G. R. Brigham, Washington, D. C., red-billed hill-tit.

Caflisch Lumber Co., Albright, W. Va., banded rattlesnake, copperhead, and blacksnake.

Mr. Jas. E. Cameron, Washington, D. C., red fox.

Canadian Government, through Hon. J. B. Harkin, two Rocky Mountain sheep and four mountain goats.

Mr. W. B. Carpenter, Washington, D. C., red-billed hill-tit, two Gouldian finches, two canaries, and two grass paroquets.

Mr. Milton Curtis, St. David, Ariz., Gila monster.

Mr. James Y. Davis, Washington D. C., sparrowhawk.

Mr. E. B. Dewey, Washington, D. C., sparrowhawk.

Mr. Blaine Elkins, Washington, D. C., two raccoons.

Mr. Ernest B. Ellis, Millboro, N. C., horned toad.

Mr. Isaac Ellison, Singapore, Straits Settlements, orang-utan and Javan macaque.

Mr. Louis C. Etchison, Jefferson, Md., red-tailed hawk and barn owl.

Mr. Victor J. Evans, Washington, D. C., Kadiak bear, king paroquet, red-sided eclectus parrot, and two Count Raggi's birds of paradise.

Mr. Arthur H. Fisher, Washington, D. C., coach-whip snake and spreading adder.

Mr. H. B. Fisher, Takoma Park, Md., mourning dove.

Mr. Stuart H. Gillmore and Mr. Walter C. B. Morse, Washington, D. C., coatimundi, capuchin monkey, yellow-rumped agouti, and golden-hooded oriole.

Dr. Frederic W. Goding, Guayaquil, Ecuador, two Galapagos tortoises.

Mr. Leonard C. Gunnell, Washington, D. C., woodcock.

Mr. A. K. Haagner, Pretoria, South Africa, Rhodesian baboon.

Mrs. E. B. Harden, Washington, D. C., three horned toads.

Hon. Warren G. Harding, White House, Washington, D. C., Alaskan bald eagle.

Mrs. E. P. Hopkins, Washington, D. C., two canaries.

Mrs. John F. Hord, Washington, D. C., grass paroquet, red-billed weaver, nutmeg finch, European goldfinch, two strawberry finches, two black-headed finches, three Java finches, four canaries, and seven bengalees.

Mr. L. M. Humphrey, Glen Echo, Md., pilot blacksnake.

Miss May E. Irish, Hillside, Me., duck hawk.

Mrs. H. S. Johnson, Washington, D. C., canary.

Mr. Ellis S. Joseph, Sydney, Australia, sulphur-crested cockatoo and four red-rumped paroquets.

Maj. Howard C. Judson, United States Marine Corps, Washington, D. C., red-crowned parrot and yellow-cheeked parrot.

Mr. Charles R. Kengla, Washington, D. C., great horned owl.

Mr. J. C. Lindsey, Clarendon, Va., ringed turtledove.

Mrs. L. D. Lunt, Landover, Md., alligator.

Mr. George Marshall, Laurel, Md., garter snake and blacksnake.

Mrs. W. S. Moore, Washington, D. C., tovi paroquet.

Dr. F. H. Morhart, Washington, D. C., raccoon.

Mrs. Louis Nulton, Winchester, Va., two marmosets.

Mr. L. C. Painter, Alexandria, Va., three red-shouldered hawks.

Miss Mary Dixon Palmer, Washington, D. C., alligator.

Pan American Union, Washington, D. C., 16 alligators.

Mr. L. V. Pearson, Washington, D. C., red-tailed hawk.

Mr. Jack Polkinhorn, Washington, D. C., painted turtle.

Mrs. N. C. Reid, Cristobal, Canal Zone, Panama deer.

Mrs. E. T. Ryan, Washington, D. C., canary.

Edw. S. Schmid, Washington, D. C., blacksnake and two skunks.
R. W. Shufeldt, Washington, D. C., box tortoise, ground rattlesnake, two snakes, and two wood turtles.
Lubert Sisco, Washington, D. C., pilot blacksnake.
H. N. Slater, New York, N. Y., East African baboon.
G. T. Smallwood, Washington, D. C., 15 opossums.
Albert Stabler, Washington, D. C., barred owl.
Robert M. Stabler, Washington, D. C., five Virginia opossums.
Ida Stanley, Washington, D. C., raccoon.
J. F. Steffey, Fort Washington, Md., great horned owl.
Arthur Tew, Washington, D. C., alligator.
E. F. Townsend, Washington, D. C., alligator.
Russell Tyson, Brattleboro, Vt., albino woodchuck.
Titus Ulke, Washington, D. C., painted turtle and milk snake.
F. L. Van Patten, Great Falls, Va., barred owl.
O. D. Wayland, Washington, D. C., canary.
J. T. Wenchel, Takoma Park, Md., rabbit.
Ira Cartright Wetherill, Machudoc, Va., diamond-back terrapin.
Allen H. Whisner, Washington, D. C., fox squirrel.

ths.—Fifty-five mammals were born and 21 birds were hatched park during the year. As usual, these records include only s are reared to a reasonable age, no account being made in these hed statistics of young that live only a few days. The births le: European brown bear, 4; dingo, 2; great gray kangaroo, 1; ngaroo, 3; black-tailed wallaby, 2; rufous-bellied wallaby, 1; -tailed rock wallaby, 1; Australian opossum, 1; rhesus monkey, na, 1; mountain goat, 1; Rocky Mountain sheep, 1; Indian pe, 2; American bison, 3; llama, 3; guanaco, 1; Virginia deer, ck-tailed deer, 3; fallow deer, 1; Japanese deer, 3; hog deer, 3; ngha, 2; red deer, 6; American elk, 2. Birds hatched were of llowing species: White ibis, American coot, wood duck, canary, eafowl.

hanges.—There were received during the year, in exchange for is stock, 57 mammals, 152 birds, and 6 reptiles. The most tant of these accessions were a large collection of Australasian from Mr. E. S. Joseph, the well-known animal dealer of y, Australia; and a collection of African mammals from Mr. Haagner, Pretoria, South Africa. Among the birds received Mr. Joseph are such desirable species as the pied goose, Eyton's luck, Australian black duck, Pacific gull, white-bellied sea golden-shouldered paroquet, and satin bower-bird. African als included in the exchange from Mr. Haagner were a lechwe pe, 2 blesboks, a springbok, an African porcupine, a chacma n, and a specimen of Wahlberg's mongoose. Other valuable als received in exchange from miscellaneous sources are 2 ry apes from Gibraltar, white-collared, black, and sooty manga- an Arabian baboon, 2 ruffed lemurs, 2 Malay porcupines, 2 civets, and a Florida manatee.

The birds received in exchange include also 2 sun-bitterns, 2 black-necked swans, 2 Cape Barren geese, 4 upland geese, an Indian jabiru, a sarus crane, scarlet ibis, yellow-wattled lapwing, and numerous small birds of various kinds. Five tree iguanas and a large boa constrictor were received from South America.

Purchases.—Only 9 mammals, 45 birds, and 9 reptiles were purchased during the year, as the limited funds available would not permit of much expenditure for stock. The mammals purchased were 4 armadillos, 2 gray foxes, a Florida lynx, a pigtailed monkey, and one bandicoot. Birds purchased were mostly hawks, owls, and waterfowl at low cost, but some exceptionally valuable specimens were also obtained. A specimen of the rare kagu from New Caledonia Island, and of the Nepalese paroquet from India, represent species new to the collection.

Transfers.—The Biological Survey of the Department of Agriculture continued its contributions to the collection. Two young pumas or mountain lions from the Kaibab Forest, Utah, through Mr. George E. Holman; and three young pumas from Arizona, through Mr. M. E. Musgrave, were among the most valuable transfers from the survey. Mr. Vernon Bailey, chief field naturalist, contributed an interesting collection of small mammals, including various species of pocket mice, kangaroo rats, spermophiles, and other rodents. Two little brown cranes from Nebraska were also transferred from field agents of the Biological Survey.

Captured in the park.—Five birds and 2 reptiles, captured within the National Zoological Park, were added to the collection.

Deposited.—A few parrots and other birds and one reptile, needed for exhibition, were accepted on deposit. Owing to the greatly increased work at the park and the small force of keepers employed to care for the growing collections, it has been necessary to refuse birds and mammals offered on deposit, and subject to recall by the owner, unless the specimens represent species which add distinctly to the exhibition value of the collection.

REMOVALS.

Surplus animals sent away in exchange for other stock during the year included 62 mammals, 45 birds, and 12 reptiles. Most of the surplus animals were born in the park. Among the specimens so exchanged were a young hippopotamus, 5 American bison, 1 yak, 1 East African eland, 1 Indian antelope, 4 llamas, 2 American elk, 11 European red deer, 2 Japanese deer, 2 red kangaroos, 2 European brown bears, 2 African lions, 1 mountain lion, 4 gray foxes, 2 wolves, 2 coypus, 3 rhesus monkeys, a number of waterfowl, peafowl, and other birds, and 12 alligators.

A number of animals on deposit were returned to owners.

The death rate remains very low; for mammals and birds about as in the past four years; for reptiles much lower. Among the most serious losses of mammals long in the collection must be mentioned the death of the vicuña (*Lama vicugna*) from enteritis on September 7, 1920. This animal was received at the park on November 24, 1908, and thus had been in the collection nearly 12 years. A female zebu (*Bos indicus*), received when about 3 years old, on April 11, 1899, died on March 25, 1921, only a few days under 22 years from date of arrival. A male American elk, born in the park May 31, 1910, died November 5, 1920. The male Kenai Peninsula black bear (*Ursus americanus perniger*), received when a cub of about 2 years of age, March 5, 1903, died of internal hemorrhage, June 23, 1921, after 18 years and 3 months in the park. A coyote (*Canis latrans*), received April 26, 1906, died September 28, 1920; a paca (*Cuniculus paca*), received April 11, 1908, died January 3, 1921, of acute congestion of the lungs; and a brown macaque (*Macaca speciosa*), received July 30, 1910, died of gastroenteritis on November 26, 1920.

Three birds with long records were lost during the year. A red-and-blue macaw (*Ara chloroptera*), received as a gift from the governor of the State of Para, Brazil, August 7, 1899, died nearly 21 years later, on July 3, 1920. A yellow-shouldered parrot (*Amazona barbadensis*), received from Hon. E. H. Plumacher, American consul at Maracaibo, Venezuela, September 10, 1902, died on January 26, 1921; and a demoiselle crane, received July 2, 1903, died on June 18, 1921.

Other serious losses were a female bison, died of metritis, July 7, 1920; a male llama, acute congestion of lungs, July 25, 1920; and a male prong-horned antelope, anemia, October 13, 1920.

Post-mortem examinations were made by the pathological division of the Bureau of Animal Industry, and, in four cases, by the Army Medical Museum. The following list shows the results of autopsies, the cases being arranged by groups:

CAUSES OF DEATH.

MAMMALS.

Marsupialia: Tuberculosis, 2; congestion of lungs, 1; pleurisy and pericarditis, 1; enteritis, 1; peritonitis, 1; pyemia, 1; septicemia, 1.

Carnivora: Pneumonia, 2; tuberculosis, 1; gastroenteritis, 2; internal hemorrhage, 3; leukemia, 1.

Rodentia: Congestion of lungs, 1.

Primates: Tuberculosis, 5; enteritis, 5; gastroenteritis, 2; colitis, 1; echinococcus infestation, 1; cage paralysis, 1.

Artiodactyla: Pneumonia, 1; verminous broncho-pneumonia, 1; tuberculosis, 1; congestion of lungs, 1; enteritis, 2; gastritis, 1; gastroenteritis, 1; metritis, 1; anemia, 3; accident, 1.

BIRDS.

Ciconiiformes: Impaction of stomach, 1; anemia, 1; septicemia, 2; no cause found, 3.

Anseriformes: Pneumonia, 1; enteritis, 2; no cause found, 3.

Falconiformes: No cause found, 1.

Galliformes: Tuberculosis, 1; aspergillosis, 2; enteritis, 3; coccidiosis, 6; wry-neck, 1; no cause found, 2.

Gruiformes: Aspergillosis, 1; enteritis, 1; no cause found, 2.

Charadriiformes: Tuberculosis, 1; enteritis, 1; internal hemorrhage, 1.

Psittaciformes: Enteritis, 3; anemia, 1; internal hemorrhage, 1.

Coraciiformes: Enteritis, 1; abdominal tumor and enteritis, 1.

Passeriformes: Enteritis, 6.

REPTILES.

Serpentes: Pneumonia, 1; no cause found, 1.

Thirty-two specimens of special scientific importance, or needed for exhibition purposes, were transferred after death to the United States National Museum. These included 16 mammals, 11 birds, and 5 reptiles. Four specimens of mammals, desired for anatomical work, were sent to the Army Medical Museum. The skins of 17 birds were added to the reference collection of "dealers' cage birds" in the office of the superintendent, National Zoological Park.

ANIMALS IN THE COLLECTION JUNE 30, 1921.

MAMMALS.

MARSUPIALIA.

Virginia opossum (*Didelphis virginiana*)	18
Tasmanian devil (*Sarcophilus harrisii*)	2
Australian opossum (*Trichosurus vulpecula*)	2
Dusky phalanger (*Trichosurus fuliginosus*)	1
Flying phalanger (*Petaurus breviceps*)	8
Brush-tailed rock wallaby (*Petrogale penicillata*)	4
Rufous-bellied wallaby (*Macropus billardierii*)	6
Parma wallaby (*Macropus parma*)	1
Black-tailed wallaby (*Macropus bicolor*)	3
Great gray kangaroo (*Macropus giganteus*)	2
Black-faced kangaroo (*Macropus melanops*)	2
Wallaroo (*Macropus robustus*)	2
Red kangaroo (*Macropus rufus*)	8

CARNIVORA.

Kadiak bear (*Ursus middendorffi*)	2
Alaska Peninsula bear (*Ursus gyas*)	2
Yakutat bear (*Ursus dalli*)	1
Kidder's bear (*Ursus kidderi*)	2
European bear (*Ursus arctos*)	6
Grizzly bear (*Ursus horribilis*)	2
Apache grizzly (*Ursus apache*)	1
Himalayan bear (*Ursus thibetanus*)	1
Black bear (*Ursus americanus*)	1
Cinnamon bear (*Ursus americanus cinnamomum*)	2
Florida bear (*Ursus floridanus*)	2
Glacier bear (*Ursus emmonsii*)	1
Sun bear (*Helarctos malayanus*)	1
Sloth bear (*Melursus ursinus*)	1
Polar bear (*Thalarctos maritimus*)	2
Dingo (*Canis dingo*)	4
Eskimo dog (*Canis familiaris*)	2
Gray wolf (*Canis nubilus*)	8
Southern wolf (*Canis floridanus*)	1
Woodhouse's wolf (*Canis frustror*)	2
Coyote (*Canis latrans*)	1
Red fox (*Vulpes fulva*)	5
Kit fox (*Vulpes velox*)	2
Gray fox (*Urocyon cinereoargenteus*)	4
Cacomistle (*Bassariscus astutus*)	1
Raccoon (*Procyon lotor*)	12
Gray coatimundi (*Nasua narica*)	2
Red coatimundi (*Nasua nasua*)	2
Kinkajou (*Potos flavus*)	2
Mexican kinkajou (*Potos flavus aztecus*)	1
Marten (*Martes americana*)	1
Ferret (*Mustela furo*)	1
Tayra (*Tayra barbara*)	1
Skunk (*Mephitis nigra*)	3
Florida skunk (*Mephitis elongata*)	2
American badger (*Taxidea taxus*)	1

ɔr (*Meles meles*)	1
Lutra canadensis vaga)	2
aradoxurus hermaphro-	2
ngoose (*Helogale par-*	1
(*Crocuta crocuta*)	1
[*Hyæna hyæna*)	2
ı (*Acinonyx jubatus*)	2
)	2
'elis tigris)	1
ger (*Felis tigris longi-*	2
pardus)	1
leopard (*Felis pardus*	1
ɔnca)	1
t (*Felis pardalis bra-*	1
elis tigrina)	1
Felis uncia)	1
(*Felis azteca*)	4
(*Felis hippolestes*)	3
ynx canadensis)	1
cat (*Lynx uinta*)	3
rufus)	2
ynx rufus floridanus)	1

PINNIPEDIA.

lion (*Zalophus califor-*	2
hoca vitulina)	1

RODENTIA.

ırmota monax)	2
(*Marmota flaviventris*	1
nomys ludovicianus)	5
rairie dog (*Cynomys*	2
el (*Ammospermophilus*	1
ıe squirrel (*Ammosper-*	
risii)	1
ermophile (*Citellus tere-*	3
ɔphile (*Citellus spilo-*	1
rel (*Sciurus boothiæ*)	1
ciurus niger)	1
(*Sciurus carolinensis*)	2
mouse (*Perognathus*	1
mouse (*Perognathus*	4
mouse (*Perognathus*	
niger)	3
Dipodomys spectabilis)	1
;aroo rat (*Dipodomys*	3
rat (*Perodipus ordii*)	2
r (*Castor canadensis*)	1
ɔuse (*Onychomys tor-*	3
er mouse (*Onychomys*	
ıscogriseus)	1
Montana white-footed mouse (*Peromyscus leucopus aridulus*)	1
Desert mouse (*Peromyscus eremicus*)	4
Nebraska white-footed mouse (*Peromyscus maniculatus osgoodi*)	2
Parasitic mouse (*Peromyscus californicus*)	1
Wood rat (*Neotoma albigula*)	2
African porcupine (*Hystrix africæaustralis*)	1
Malay porcupine (*Acanthion brachyurum*)	2
Coypu (*Myocastor coypus*)	3
Paca (*Cuniculus paca*)	2
Central American paca (*Cuniculus paca virgatus*)	1
Mexican agouti (*Dasyprocta mexicana*)	1
Speckled agouti (*Dasyprocta punctata*)	2
Panama agouti (*Dasyprocta punctata isthmica*)	1
Azara's agouti (*Dasyprocta azaræ*)	2
Trinidad agouti (*Dasyprocta rubrata*)	2
Crested agouti (*Dasyprocta cristata*)	2
Yellow-rumped agouti (*Dasyprocta lucifer cayennæ*)	1
Peruvian guinea pig (*Cavia tschudii pallidior*)	2
Guinea pig (*Cavia porcellus*)	20
Capybara (*Hydrochærus hydrochæris*)	1

LAGOMORPHA.

Domestic rabbit (*Oryctolagus cuniculus*)	10

EDENTATA.

Nine-banded armadillo (*Dasypus novemcintus*)	2

PRIMATES.

Ruffed lemur (*Lemur variegatus*)	2
Black spider monkey (*Ateles ater*)	1
Gray spider monkey (*Ateles geoffroyi*)	1
White-throated capuchin (*Cebus capucinus*)	4
Weeping capuchin (*Cebus apella*)	1
Brown capuchin (*Cebus fatuellus*)	1
Margarita capuchin (*Cebus margaritæ*)	1
Marmoset (*Callithrix jacchus*)	2
Chacma (*Papio porcarius*)	2
Rhodesian baboon (*Papio rhodesiæ*)	1
Hamadryas baboon (*Papio hamadryas*)	1
East African baboon (*Papio ibeanus*)	1
Mandrill (*Papio sphinx*)	1
Drill (*Papio leucophæus*)	1
Moor macaque (*Cynopithecus maurus*)	1
Barbary ape (*Simia sylvanus*)	2
Brown macaque (*Macaca speciosa*)	1
Pig-tailed monkey (*Macaca nemestrina*)	1
Burmese macaque (*Macaca andamanensis*)	1

Rhesus monkey (*Macaca rhesus*)	29
Bonnet monkey (*Macaca sinica*)	1
Javan macaque (*Macaca mordax*)	4
Black mangabey (*Cercocebus aterrimus*)	1
Sooty mangabey (*Cercocebus fuliginosus*)	2
White-collared mangabey (*Cercocebus torquatus*)	1
Green guenon (*Lasiopyga callitrichus*)	2
Vervet guenon (*Lasiopyga pygerythra*)	1
Mona (*Lasiopyga mona*)	4
Roloway guenon (*Lasiopyga roloway*)	1
Patas monkey (*Erythrocebus patas*)	2
Chimpanzee (*Pan troglodytes*)	1
Orang-utan (*Pongo pygmæus*)	1

ARTIODACTYLA.

Wild boar (*Sus scrofa*)	1
Wart-hog (*Phacochærus æthiopicus*)	2
Collared peccary (*Pecari angulatus*)	1
Hippopotamus (*Hippopotamus amphibius*)	2
Bactrian camel (*Camelus bactrianus*)	2
Arabian camel (*Camelus dromedarius*)	2
Guanaco (*Lama guanicoe*)	4
Llama (*Lama glama*)	7
Alpaca (*Lama pacos*)	1
Fallow deer (*Dama dama*)	5
Axis deer (*Axis axis*)	4
Hog deer (*Hyelaphus porcinus*)	6
Sambur (*Rusa unicolor*)	2
Barasingha (*Rucervus duvaucelii*)	9
Burmese deer (*Rucervus eldii*)	1
Japanese deer (*Sika nippon*)	12
Red deer (*Cervus elaphus*)	15
Kashmir deer (*Cervus hanglu*)	2
Bedford deer (*Cervus xanthopygus*)	6
American elk (*Cervus canadensis*)	6
Virginia deer (*Odocoileus virginianus*)	12
Panama deer (*Odocoileus chiriquensis*)	1
Mule deer (*Odocoileus hemionus*)	2
Black-tailed deer (*Odocoileus columbianus*)	5
Trinidad brocket (*Mazama simplicicornis*)	1
Blesbok (*Damaliscus albifrons*)	3
White-tailed gnu (*Connochætes gnou*)	1
Lechwe (*Onotragus lechwe*)	1
Indian antelope (*Antilope cervicapra*)	5
Nilgai (*Boselaphus tragocamelus*)	2
East African eland (*Taurotragus oryx livingstonii*)	2
Angora goat (*Capra hircus*)	1
Tahr (*Hemitragus jemlahicus*)	3
Mountain goat (*Oreamnos americanus*)	4
Aoudad (*Ammotragus lervia*)	1
Rocky Mountain sheep (*Ovis canadensis*)	6
Arizona mountain sheep (*Ovis canadensis gaillardi*)	1
Barbados sheep (*Ovis aries*)	5
Zebu (*Bos indicus*)	1
Yak (*Poëphagus grunniens*)	4
American bison (*Bison bison*)	13
Indian buffalo (*Bubalus bubalis*)	3

PERISSODACTYLA.

Brazilian tapir (*Tapirus terrestris*)	2
Mongolian horse (*Equus przewalskii*)	1
Grant's zebra (*Equus burchelli granti*)	1
Grevy's zebra (*Equus grevyi*)	1
Zebra-horse hybrid (*Equus grevyi caballus*)	1
Zebra-ass hybrid (*Equus grevyi asinus*)	1

PROBOSCIDEA.

Abyssinian elephant (*Loxodonta africana oxyotis*)	1
Sumatran elephant (*Elephas sumatranus*)	2

SIRENIA.

Florida manatee (*Trichechus latirostris*)	1

BIRDS.

RATITÆ.

South African ostrich (*Struthio australis*)	4
Somaliland ostrich (*Struthio molybdophanes*)	1
Rhea (*Rhea americana*)	2
Sclater's cassowary (*Casuarius philipi*)	1
Emu (*Dromiceius novæhollandiæ*)	2

CICONIIFORMES.

Water-turkey (*Anhinga anhinga*)	4
American white pelican (*Pelecanus erythrorhynchos*)	7
European white pelican (*Pelecanus onocrotalus*)	2
Roseate pelican (*Pelecanus roseus*)	2
Australian pelican (*Pelecanus conspicillatus*)	2
Brown pelican (*Pelecanus occidentalis*)	9
Florida cormorant (*Phalacrocorax auritus floridanus*)	13
Great white heron (*Ardea occidentalis*)	2
Goliath heron (*Ardea goliath*)	1
American egret (*Casmerodius egretta*)	3
Snowy egret (*Egretta candidissima*)	4
Black-crowned night heron (*Nycticorax nycticorax nævius*)	28
Boatbill (*Cochlearius cochlearius*)	2
White stork (*Ciconia ciconia*)	3
Black stork (*Ciconia nigra*)	1
Indian jabiru (*Xenorhynchus asiaticus*)	1
Straw-necked ibis (*Carphibis spinicollis*)	1
Sacred ibis (*Threskiornis æthiopicus*)	3
Australian ibis (*Threskiornis strictipennis*)	2

ıara alba)	13
Guara rubra)	1
bill (*Ajaia ajaja*)	2
ımingo (*Phœnicopterus*	1

ANSERIFORMES.

s platyrhynchos)	18
black duck (*Anas platy-* ır.)	3
ınas rubripes)	23
ack duck (*Anas super-*	4
ıclelasmus streperus)	2
geon (*Mareca penelope*)	5
reca americana)	7
teal (*Nettion carolinense*)	7
(*Nettion crecca*)	10
Nettion formosum)	1
›al (*Querquedula discors*)	6
erquedula querquedula)	1
l (*Querquedula cyanop-*	1
tula clypeata)	4
ı *acuta*)	6
ıa sponsa)	15
ı (*Dendronessa galericu-*	17
duck (*Netta rufina*)	1
Marila valisineria)	2
ıila americana)	8
uck (*Marila collaris*)	1
luck (*Marila affinis*)	9
ck (*Marila nyroca*)	1
chard (*Metopiana pepo-*	4
se (*Chenalopex ægyptia-*	2
Chloëphaga leucoptera)	2
hen hyperborcus)	2
goose (*Chen hyperboreus*	2
hen cærulescens)	7
goose (*Anser albifrons*)	3
te-fronted goose (*Anser mbeli*)	3
›se (*Eulabeia indica*)	1
(*Branta canadensis*)	12
ose (*Branta canadensis*	9
ıe (*Branta canadensis*	2
bernicla glaucogastra)	11
(*Branta leucopsis*)	7
goose (*Cereopsis novæ-*	2
›ose (*Plectropterus gam-*	2
ıseranas semipalmata)	2
ree duck (*Dendrocygna*	6
duck (*Dendrocygna ey-*	4
ree duck (*Dendrocygna*	2
a (*Coscoroba coscoroba*)	1
ygnus gibbus)	3
Whistling swan (*Olor columbianus*)	1
Trumpeter swan (*Olor buccinator*)	1
Black swan (*Chenopis atrata*)	2

FALCONIFORMES.

South American condor (*Vultur gryphus*)	1
California condor (*Gymnogyps californianus*)	3
Turkey vulture (*Cathartes aura*)	3
Black vulture (*Coragyps urubu*)	2
King vulture (*Sarcoramphus papa*)	2
Secretary bird (*Sagittarius serpentarius*)	1
Griffon vulture (*Gyps fulvus*)	1
Cinereous vulture (*Aegypius monachus*)	2
Caracara (*Polyborus cheriway*)	2
Wedge-tailed eagle (*Uroaëtus audax*)	2
Golden eagle (*Aquila chrysaëtos*)	3
White-bellied sea eagle (*Concuma leucogaster*)	2
Bald eagle (*Haliæetus leucocephalus*)	11
Alaskan bald eagle (*Haliæetus leucocephalus alascanus*)	2
Broad-winged hawk (*Buteo platypterus*)	1
Red-tailed hawk (*Buteo borealis*)	6
Red-shouldered hawk (*Buteo lineatus*)	3
Sparrow hawk (*Falco sparverius*)	4
Duck hawk (*Falco peregrinus anatum*)	1

GALLIFORMES.

Razor-billed curassow (*Mitu mitu*)	1
Wild turkey (*Meleagris gallopavo silvestris*)	1
Peafowl (*Pavo cristatus*)	41
Peacock pheasant (*Polyplectron bicalcaratum*)	1
Silver pheasant (*Gennæus nycthemerus*)	1
Ring-necked pheasant (*Phasianus torquatus*)	2
Bobwhite (*Colinus virginianus*)	1
Gambel's quail (*Lophortyx gambelii*)	3
Valley quail (*Lophortyx californica vallicola*)	2

GRUIFORMES.

East Indian gallinule (*Porphyrio calvus*)	5
American coot (*Fulica americana*)	2
South Island weka rail (*Ocydromus australis*)	3
Short-winged weka (*Ocydromus brachypterus*)	2
Earl's weka (*Ocydromus earli*)	1
Whooping crane (*Grus americana*)	1
Sandhill crane (*Grus mexicana*)	2
Little brown crane (*Grus canadensis*)	6
White-necked crane (*Grus leucauchen*)	1
Indian white crane (*Grus leucogeranus*)	1
Lilford's crane (*Grus lilfordi*)	2
Sarus crane (*Grus collaris*)	1
Australian crane (*Grus rubicunda*)	2
Demoiselle crane (*Anthropoides virgo*)	4

Crowned crane (*Balearica paronina*) 1
White-backed trumpeter (*Psophia leucoptera*) 1
Cariama (*Cariama cristata*) 1
Kagu (*Rhynochetos jubatus*) 1

CHARADRIIFORMES.

Yellow-wattled lapwing (*Lobivanellus indicus*) 1
Pacific gull (*Gabianus pacificus*) 2
Great black-backed gull (*Larus marinus*) 1
Herring gull (*Larus argentatus*) 4
Laughing gull (*Larus atricilla*) 3
Australian crested pigeon (*Ocyphaps lophotes*) 5
Bronze-wing pigeon (*Phaps chalcoptera*) 2
Wonga-wonga pigeon (*Leucosarcia picata*) 6
Wood pigeon (*Columba palumbus*) 7
Mourning dove (*Zenaidura macroura*) 2
Necklaced dove (*Spilopelia tigrina*) 4
Zebra dove (*Geopelia striata*) 4
Bar-shouldered dove (*Geopelia humeralis*) 2
Inca dove (*Scardafella inca*) 2
Cuban ground dove (*Chæmepelia passerina aflavida*) 2
Green-winged dove (*Chalcophaps indica*) 3
New Guinea green dove (*Chalcophaps chrysochlora*) 6
Ringed turtle-dove (*Streptopelia risoria*) 2

PSITTACIFORMES.

Kea (*Nestor notabilis*) 4
Cockateel (*Calopsitta novæhollandiæ*) 2
Roseate cockatoo (*Kakatoe roseicapilla*) 22
Bare-eyed cockatoo (*Kakatoe gymnopis*) 3
Leadbeater's cockatoo (*Kakatoe leadbeateri*) 1
White cockatoo (*Kakatoe alba*) 2
Sulphur-crested cockatoo (*Kakatoe galerita*) 8
Great red-crested cockatoo (*Kakatoe moluccensis*) 1
Mexican green macaw (*Ara mexicana*) 2
Blue-and-yellow macaw (*Ara ararauna*) 2
Red-and-blue-and-yellow macaw (*Ara macao*) 8
Yellow-winged paroquet (*Tirica virescens*) 1
Tui paroquet (*Brotogeris stthomae*) 2
Tovi paroquet (*Brotogeris jugularis*) 2
Yellow-naped parrot (*Amazona auropalliata*) 2
Yellow-cheeked parrot (*Amazona autumnalis*) 1
Orange-winged parrot (*Amazona amazonica*) 1
Red-crowned parrot (*Amazona viridigenalis*) 6
Double yellow-head parrot (*Amazona oratrix*) 6
Yellow-headed parrot (*Amazona ochrocephala*) 2
Festive parrot (*Amazona festiva*) 1
Cuban parrot (*Amazona leucocephala*) 1
Gray parrot (*Psittacus erithacus*) 2
Lesser vasa parrot (*Coracopsis nigra*) 1
Pennant's paroquet (*Platycercus elegans*) 1
Rosella paroquet (*Platycercus eximius*) 1
Black-tailed paroquet (*Polytelis melanura*) 2
Red-rumped paroquet (*Psephotus hæmatonotus*) 1
Ring-necked paroquet (*Conurus torquatus*) 1
Nepalese paroquet (*Conurus nepalensis*) 1
Grass paroquet (*Melopsittacus undulatus*) 6

CORACIIFORMES.

Giant kingfisher (*Dacelo gigas*) 4
Short-keeled toucan (*Ramphastos piscivorus brevicarinatus*) 1
Barred owl (*Strix varia*) 1
Snowy owl (*Nyctea nyctea*) 2
Screech owl (*Otus asio*) 3
Great horned owl (*Bubo virginianus*) 11
Western horned owl (*Bubo virginianus pallescens*) 1
American barn owl (*Tyto perlata pratincola*) 3

PASSERIFORMES.

Silver-eared hill-tit (*Mesia argentauris*) 3
Red-billed hill-tit (*Liothrix luteus*) 6
Black-gorgeted laughing-thrush (*Garrulax pectoralis*) 1
White-eared bulbul (*Otocompsa leucotis*)
European blackbird (*Turdus merula*)
Robin (*Planesticus migratorius*)
Cedar waxwing (*Bombycilla cedrorum*)
Piping crow-shrike (*Gymnorhina tibicen*)
Count Raggi's bird of paradise (*Paradisea raggiana*)
Satin bower-bird (*Ptilonorhynchus violaceus*)
European raven (*Corvus corax*)
Australian crow (*Corvus coronoides*)
Jackdaw (*Corvus monedula*)
Yucatan jay (*Cissilopha yucatanica*)
Blue jay (*Cyanocitta cristata*)
Green jay (*Xanthoura luxuosa*)
Australian gray jumper (*Struthidea cinerea*)
Starling (*Sturnus vulgaris*)
Crimson tanager (*Ramphocelus dimidiatus*)
Blue tanager (*Thraupis cana*)

Shaft-tailed whydah (*Tetrænura regia*)	
Napoleon weaver (*Pyromelana afra*)	1
Red-billed weaver (*Quelea quelea*)	1
Madagascar weaver (*Foudia madagascariensis*)	3
Fire finch (*Lagonosticta senegala*)	2
Strawberry finch (*Amandava amandava*)	6
Cordon bleu (*Estrilda phœnicotis*)	1
Nutmeg finch (*Munia punctulata*)	7
White-headed nun (*Munia maja*)	4
Black-headed nun (*Munia atricapilla*)	2
Java finch (*Munia oryzivora*)	6
White Java finch (*Munia oryzivora*)	3
Fawn-and-white bengalee (*Uroloncha flavomaculata*)	4
Brown-and-white bengalee (*Uroloncha griseomaculata*)	3
Black-faced Gouldian finch (*Poephila gouldiæ*)	4
Diamond finch (*Steganopleura guttata*)	8
Zebra finch (*Tæniopygia castanotis*)	4
Cutthroat finch (*Amadina fasciata*)	3
Vera Cruz red wing (*Agelaius phœniceus richmondi*)	2
Golden-hooded oriole (*Icterus chrysocephalus*)	1
Purple grackle (*Quiscalus quiscula*)	5
Yellow-backed cacique (*Cacicus cela*)	2
Black-tailed hawfinch (*Eophona melanura*)	1
Bullfinch (*Pyrrhula pyrrhula*)	5
Greenfinch (*Chloris chloris*)	3
Yellowhammer (*Emberiza citrinella*)	4
European goldfinch (*Carduelis carduelis*)	1
Bramblefinch (*Fringilla montifringilla*)	6
European siskin (*Spinus spinus*)	2
Mexican goldfinch (*Astragalinus psaltria mexicanus*)	1
House finch (*Carpodacus mexicanus frontalis*)	2
Purple finch (*Carpodacus purpureus*)	1
Canary (*Serinus canarius*)	15
Green singing finch (*Serinus icterus*)	1
Slate-colored junco (*Junco hyemalis*)	2
Tree sparrow (*Spizella monticola*)	1
White-throated sparrow (*Zonotrichia albicollis*)	4
Song sparrow (*Melospiza melodia*)	1
San Diego song sparrow (*Melospiza melodia cooperi*)	4
Fox sparrow (*Passerella iliaca*)	2
California towhee (*Pipilo crissalis*)	2
Saffron finch (*Sicalis flaveola*)	3
Seed eater (*Sporophila gutturalis*)	2
Nonpareil (*Passerina ciris*)	15
Blue grosbeak (*Guiraca cærulea*)	1
Red-crested cardinal (*Paroaria cucullata*)	1
Cardinal (*Cardinalis cardinalis*)	2

REPTILES.

Alligator (*Alligator mississipiensis*)	36
Teguexin (*Tupinambis teguixin*)	2
Gila monster (*Heloderma suspectum*)	7
Tree iguana (*Iguana iguana*)	5
Rock iguana (*Cyclura bœolopha*)	4
Horned toad (*Phrynosoma cornutum*)	1
Rock python (*Python molurus*)	2
Anaconda (*Eunectes murinus*)	2
Boa constrictor (*Constrictor constrictor*)	4
Spreading adder (*Heterodon contortrix*)	1
Blacksnake (*Coluber constrictor*)	1
Coach-whip snake (*Coluber flagellum*)	1
Chicken snake (*Elaphe quadrivittata*)	1
Gopher snake (*Drymarchon corais couperi*)	1
Pine snake (*Pituophis melanoleucus*)	5
King snake (*Lampropeltis getulus*)	2
Milk snake (*Lampropeltis triangulum*)	1
Water snake (*Natrix sipedon*)	3
Queen snake (*Natrix septemvittata*)	1
Garter snake (*Thamnophis sirtalis*)	3
Moccasin (*Agkistrodon piscivorus*)	1
Western diamond rattler (*Crotalus atrox*)	2
Ground rattler (*Sistrurus miliarius*)	2
Snapping turtle (*Chelydra serpentina*)	2
Rossignon's snapping turtle (*Chelydra rossignonii*)	1
Wood turtle (*Clemmys insculpta*)	2
Diamond-back terrapin (*Malaclemys centrata*)	1
Painted turtle (*Chrysemys picta*)	1
Cooter (*Pseudemys scripta*)	1
Central American cooter (*Pseudemys ornata*)	1
Gopher tortoise (*Gopherus polyphemus*)	2
Duncan Island tortoise (*Testudo ephippium*)	1
Indefatigable Island tortoise (*Testudo porteri*)	1
Albemarle Island tortoise (*Testudo vicina*)	2

STATEMENT OF THE COLLECTION.

Accessions during the year.

	Mammals.	Birds.	Reptiles.	Totals.
Presented	52	73	53	178
Born and hatched in National Zoological Park	55	21	.....	76
Received in exchange	57	152	6	215
Purchased	9	45	9	63
Transferred from other Government departments	62	2	.....	64
Captured in National Zoological Park	.....	5	2	7
Deposited	.....	9	1	10
Total	235	307	71	613

SUMMARY.

Animals on hand July 1, 1920	1,427
Accessions during the year	613
Total animals handled	2,040
Deduct loss (by exchange, death, and return of animals on deposit)	495
Animals on hand June 30, 1921	1,545

Class.	Species.	Individuals.
Mammals	198	541
Birds	246	901
Reptiles	34	103
Total, June 30, 1921	478	1,545

This is a gain in the collection of 59 species and 118 individuals over the total for June 30, 1920. The number of species shown is greater than ever before in the history of the park.

VISITORS.

For the second time the official attendance records exceed 2,000,000. The total number of visitors to the park for the fiscal year, as determined by count and estimate, was 2,400,837, a gain of 171,232 over the record of last year. The greatest attendance in any one month was 390,988, in March, 1921, an average per day of 12,612.

The attendance by months was as follows: In 1920—July, 172,500; August, 211,600; September, 190,900; October, 323,150; November, 104,548; December, 78,050. In 1921—January, 171,776; February, 103,375; March, 390,988; April, 193,975; May, 276,475; June, 183,500.

One hundred and twenty-four schools and classes, with a total of 13,629 individuals, visited the park during the year. The number is greatly in excess of previous years, which have shown a steady increase. The American Ornithologists' Union, then in convention

Washington, visited the park on November 12, 1920; and the ıerican Society of Mammalogists held an informal meeting, with ıcheon, at the superintendent's office May 4, 1921.

IMPROVEMENTS.

About 150 chestnut trees, many of large size, that had been killed ring the past few years by the prevalent bark disease, were logged ring the winter. A small, second-hand sawmill and a shingle mill :re purchased at low cost, and 140,000 feet of choice chestnut lum- r and about 80,000 shingles were salvaged by the operations. The ad chestnut trees were scattered through the undeveloped forest ea in the northwestern part of the park, bordering Klingle Road; d as great care was taken in logging, there has resulted very little mage to the beauty of the wood. A few young chestnut trees not t affected by the blight were left standing. With the sawmill on nd it will be possible to save much choice lumber from time to ne as trees die or are removed in the development of the park.

In continuation of the policy inaugurated two years ago, of widen- g the main automobile roads crossing the park, the section of road- ıy between the concourse and the scales near the camel yards and ıble was broken up and rebuilt. Other sections of the roads were ɔaired, and the ford across Rock Creek near Klingle entrance was ɔuilt with cement and the approaches improved. A cement side- ılk, 10 feet wide, corresponding to the walk on the north side of e entrance road at the Harvard Street gate was constructed on the ıth side from this entrance to the cement bridge. The number of ıitors entering the park by this gate has greatly increased with e development of the Mount Pleasant section of the city, and the :reased sidewalk area has been badly needed for several years.

The great flight cage for large birds has been entirely cleaned, the :el framework and wire covering scraped, and treated to two coats paint. The roof of the camel and llama house has been repaired; d a new hot-water heating boiler installed in the monkey house. Minor improvements made during the year include Telford pave- :nts in several of the paddocks, a shed for tools at the machine ɔp, preparation of a large paddock for the mountain goats, new ard rails bordering the inclosure for the Sumatran elephants, inting of the puma cages and other ironwork, and the construc- n of new trash receptacles and park benches.

CLEAN-PARK CAMPAIGN.

Regardless of park regulations, the paper and trash nuisance ched such serious proportions during the early spring months t a special campaign to enforce the laws against throwing and

leaving rubbish on the lawns was inaugurated. With few exceptions visitors have taken kindly to the requests of officers that all papers and other refuse be gathered up and deposited in the trash receptacles, and a very distinct improvement in the appearance of the grounds has resulted.

With the greatly increased attendance, and especially with the present popularity of the grounds for picnic purposes, the absolute enforcement of the rubbish law is imperative. Additional trash baskets have been provided, and it is the intention to carry the campaign to a point where every visitor will realize the importance of the regulations and the seriousness of a disregard for park cleanliness. The aid of the public has been solicited by signs calling attention to the paper and trash nuisance, with a request for help. The response from the majority of visitors is gratifying, and the untidy small minority will, if necessary, be dealt with by sterner methods.

ALTERATIONS OF BOUNDARIES.

The purchase of the land necessary for the protection of the Connecticut Avenue entrance was completed during the year. The area acquired by purchase, and the included highways which by the same act become a part of the National Zoological Park, make an addition of 247,261.9 square feet or approximately 5⅔ acres. The total area of the National Zoological Park is now about 175 acres. The unexpended balance of $2,403.66, left from the appropriation of $80,000 made for the purchase of this land, is reappropriated in the sundry civil bill for 1922 toward the purchase of certain lots near the Adams Mill Road entrance to the park, between the park and Adams Mill Road. The owners having declined to sell these lots within the price limits set by the act, steps have been taken toward the institution of proceedings of condemnation.

IMPORTANT NEEDS.

Restaurant.—The most urgent improvement needed for the park is a suitable public restaurant. As pointed out in previous reports, the old refreshment stand, originally constructed as a temporary building when the attendance was only a small fraction of its present figures, is not only in a bad state of repair but is wholly inadequate for the required service. The estimated cost of a suitable building a year ago was $65,400. Since the park has now obtained, as mentioned above, a large quantity of first-class chestnut lumber, including many heavy timbers, new plans have recently been drawn by the municipal architect with the idea of utilizing this lumber to advantage. It is now believed that a restaurant building in every way suitable to the demands of the place, and probably more in keeping with the surroundings, can be constructed for $40,000.

mall-mammal house.—A building properly constructed for the ibition of small mammals has long been needed, but never so :h as at the present time. Numerous small animals now in the ection can not be shown for lack of quarters, and it is evident that 'e and more interest is being taken by visitors in the smaller :ies now on exhibition.

'rading banks and filling ravines.—During the present year some gress will be made in continuing the work of grading in the west- :ral part of the park. This work was begun five years ago but discontinued during the war. Not only will a large area of ıparatively flat space for deer yards and other paddocks result n the work, but the filling in of a near-by ravine will make ;ible the elimination of a dangerous curve in the main automobile l. It is greatly to be hoped that it will be possible to complete work within the next year, so that the unsightly condition of portion of the park adjoining the principal highway of traffic be corrected and the ground utilized to advantage for the ex- tion of animals.

espectfully submitted.

N. HOLLISTER,
Superintendent.

:. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 7.

REPORT ON THE ASTROPHYSICAL OBSERVATORY.

SIR: The Astrophysical Observatory was conducted under the following passage of the sundry civil act, approved June 5, 1919:

Astrophysical Observatory: For maintenance of the Astrophysical Observatory, under the direction of the Smithsonian Institution, including assistants, purchase of necessary books and periodicals, apparatus, making necessary observations in high altitudes, repairs and alterations of buildings, and miscellaneous expenses, $13,000.

The observatory occupies a number of frame structures within an inclosure of about 16,000 square feet south of the Smithsonian administration building at Washington, and also a cement observing station and frame cottage for observers on a plot of 10,000 square feet leased from the Carnegie Solar Observatory, on Mount Wilson, Calif.

A new solar observing station was erected in July, 1920, at the expense of funds donated for the purpose by Mr. John A. Roebling, of Bernardsville, N. J., and this station has been occupied as a solar radiation observing station by the Astrophysical Observatory since October, 1920.

The present value of the buildings and equipment for the Astrophysical Observatory owned by the Government is estimated at $50,000. This estimate contemplates the cost required to replace the outfit for the purposes of the investigation.

WORK OF THE YEAR.

At Washington.—The preparation of the manuscript for Volume IV of the Annals of the Observatory was continued. Owing to the postponement of its publication, it has required to be brought up to date by repeated additions and modifications, and it is now expected to publish in Volume IV all the results up to September, 1920, when the solar radiation apparatus which had been employed on Mount Wilson was removed to Mount Harqua Hala, Ariz. A great deal of measuring and computing was required to bring up to date the work of 1919 and 1920 on the solar constant of radiation and to work up the results of the observations of the distribution of light over the sun's disk, which have been carried on since 1916 with only partial reduction. This work went on under Mr. Fowle's direction, assisted by Mrs. Bond, computer, and for a few months by temporary computers, Miss Inez Ensign and Miss Esther Weaver. The cost of employing

these computers temporarily was borne by a gift of Mr. John A. Roebling. At the close of the fiscal year the computations of the Annals had been very nearly completed. The manuscript of the volume was also almost ready for publication, and it is hoped to put the whole to press early in the autumn of 1921.

As usual, a large amount of delicate instrument work has been done by Mr. A. Kramer, instrument maker, and still more delicate parts have been prepared by Mr. L. B. Aldrich, of the observatory staff. They have prepared and standardized a number of pyrheliometers, pyranometers, galvanometers, and bolometers for the use of the observatory and its stations.

By invitation of Dr. George E. Hale, director of the Solar Observatory at Mount Wilson, Calif., Dr. Abbot has undertaken the preparation of a special spectrobolometer for the observation of the energy spectra of the stars in the same manner in which we are accustomed to observe the energy spectrum of the sun. This outfit comprises a special spectroscope, a vacuum bolometer of special dimensions and construction, and a vacuum galvanometer designed to be of the very highest order of sensitiveness. The construction of this apparatus had been almost completed at the close of the fiscal year.

Work in the field.—As stated in last year's report, by the generosity of Mr. John A. Roebling, of Bernardsville, N. J., not only has the private station of the Smithsonian Institution located near Calama, Chile, been removed to the top of a mountain about 8 miles farther south, but the station of the Astrophysical Observatory has been relocated on the mountain called Harqua Hala, situated about 100 miles to the northwest of Phoenix, Ariz. In June, 1920, Dr. Abbot selected the site for the latter station and arranged with local contractors for the erection of an adobe building about 40 feet long, 10 feet wide, of two stories. The lower story, underground, was designed for the instruments, and the upper story for a dwelling house and computing rooms for the observers. Proceeding from Arizona to Mount Wilson, Dr. Abbot was joined early in July by Mr. L. B. Aldrich, and together they carried out at Mount Wilson, in July, August, and part of September, the usual observations on the solar constant of radiation and on the distribution of radiation over the sun's disk. In addition, they conducted a number of other investigations, including a redetermination of the constants of the secondary pyrheliometers employed in the research, a redetermination of the transmission of the spectrobolometer for different wave lengths, various investigations with the pyranometer and the Ångström pyrgeometer, and, assisted by Mrs. Abbot, investigations on the use of solar radiation for cooking purposes.

The solar cooking outfit erected on Mount Wilson some years ago was in 1920. for the first time, brought to a reasonable degree of per-

fection. The mirror, which is of parabolic cylindrical shape, about 10 feet long and 7 feet wide, brings the solar radiation to focus on a tube filled with oil which passes up the axis of the mirror, parallel to the earth's axis, and about this tube, on suitable rollers, the mirror is rotated by means of a simple and inexpensive clockwork, in order that it may always face toward the sun. The oil tube is connected with a reservoir of oil about 10 feet higher up and from this a return tube goes underneath the mirror, thus completing the circuit for the flow of oil which the mirror, by focusing the sun rays, strongly heats. The reservoir contains about a barrel of oil, which is such as is used for lubricating gas-engine cylinders. The reservoir and the oil circuit tubes are protected from the loss of heat, as far as possible, by insulation. The greatest loss of heat, however, occurs with the naked tube which passes through the mirror. This, however, is protected by a glass tube 4 inches in diameter, and this, in turn, by flat sheets of glass covering the whole mirror and protecting it from dust and wind. Two ovens are inserted in the rear of the reservoir, which is just outside the door of the observer's cottage on Mount Wilson, and food after being prepared in the kitchen, may be baked, boiled, or stewed in these ovens, according to the character of the dish. Nearly all of the food prepared for the use of the observers during their stay on Mount Wilson, from July 1 to September 15, was cooked by this solar cooker. The great advantage of the cooking is that the reservoir stays hot for a good many hours, so that cooking may be continued through the night or even through a partially cloudy day. The apparatus proved to be especially satisfactory for the canning of fruit.

In the early part of September Messrs. Abbot and Aldrich packed the apparatus which had been used on Mount Wilson for observing the solar constant of radiation and shipped the same to Wenden, Ariz., the nearest railroad station leading to Mount Harqua Hala. The apparatus was set up for observations by the end of September, and Dr. Abbot, with Mr. F. A. Greeley as assistant, carried on solar radiation measurements beginning October 3 continuously until January 20, 1921, when Dr. Abbot was relieved by Mr. L. B. Aldrich, who in turn was relieved by Mr. A. F. Moore, formerly director of the observatory at Calama and Montezuma, Chile, who reported for duty about April 20. It is intended to carry on the solar constant observations at Mount Harqua Hala on all days when the weather permits for several years in cooperation with the similar observations being made at Montezuma, Chile. With the results of the two stations, it is hoped to furnish a sound basis for the study of solar variation and the dependence of terrestrial weather conditions thereon. The station at Mount Harqua Hala was erected after a considerable investigation by the United States Weather Bureau of

sites in California, Arizona, and Nevada. From the middle of September, when Messrs. Abbot and Aldrich arrived in the vicinity, until some time in February the conditions were found to be superior to what had been expected. About 70 per cent of the days during that interval were fit for observation. The months of March, April, and May proved to be less satisfactory than was anticipated, owing to a thick haziness and much cirrus cloud. This defect, however, seems to be attending the generally unusual character of the weather in large areas of the globe. During the first four months of the year 1921, for instance, hardly more than half of the usual number of observations were made at the station in Chile, and other facts might be cited which would tend to show that the earlier part of the year 1921 was of very unusual character from a weather standpoint.

The station on Mount Harqua Hala, being 15 miles from Wenden, the railroad station, and 5 miles from a wagon road, is very isolated. The effect of such isolation on the morale of observers was very thoughtfully considered by Mr. John A. Roebling, and he added considerably to his first gift in order to provide a great many things for the comfort and recreation of the observers, both in Arizona and South America. Not all of these arrangements had been completed at the close of the fiscal year, so that mention of them may be deferred more properly to next year's report.

PERSONNEL.

Miss F. A. Graves resigned as computer on August 10, 1920.

SUMMARY.

The year has been marked by the transfer of the solar radiation measurements from Mount Wilson, Calif., to Mount Harqua Hala, Ariz., to secure more perfect weather conditions. It is intended to continue solar constant observations there daily when possible throughout the entire year for several years. Similar duplicate observations are to be carried on at Montezuma, Chile, at the private station of the Smithsonian. Thus it is hoped to provide an excellent basis of solar radiation measurements to compare with weather phenomena. This may lead to advance in methods of weather forecasting. Volume IV of the annals, covering the years 1912 to 1920, is practically ready for the press.

Respectfully submitted.

C. G. ABBOT,
Director.

Dr. C. D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 8.

REPORT ON THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

SIR: I have the honor to submit the following report on the operations of the United States Bureau of the International Catalogue of Scientific Literature for the fiscal year ending June 30, 1921:

All volumes of the fourteenth annual issue have been published, completing the catalogue through the year 1914. Financial conditions, brought about by the war and the excessive advance in the cost of publication, have since made it necessary to temporarily suspend printing the catalogue. Much of the material for 1915 and subsequent years is in the hands of the London central bureau ready for publication as soon as financial support is assured and publication costs are more nearly normal.

The work of this bureau during the year has consisted in collecting data from periodicals regularly publishing scientific papers, of which there are about 550 in the United States. In addition to these there are over 400 occasionally containing scientific matter. Book notices, reviews, and publishers' lists and the publications received through exchange by the Smithsonian Institution are also systematically used in order to make sure that no paper coming within the scope of the catalogue is overlooked. Reference slips are prepared for each paper thus collected, and the contents classified to conform to the International Catalogue subject schedule. Practically all of the classification is done by specialists, and much difficulty is experienced in obtaining suitable aid for this part of the work, owing to the very limited funds available. This lack of funds has always seriously interfered with the work of the bureau; but as much of the data through the year 1920 have been classified and are now held pending the resumption of publication, it is hoped that by the time it is called for by the central bureau most of the index cards will be ready, and that when the published volumes have been brought up to date a larger annual appropriation will be granted, so that all current publications may be immediately dealt with.

When it is considered that between 25,000 and 30,000 reference cards have annually been furnished by this bureau, some idea of the amount of expert and clerical labor involved is apparent.

As a résumé of the history of the enterprise was published in the report of this bureau for the last fiscal year, it is unnecessary to again repeat it excepting to state that financial difficulties have not been relieved, although, owing to assurances made by influential delegates

to a conference held under the auspices of the Royal Society in London during September, 1920, it appears that if certain conditions can be met financial support may be looked for from the United States. This conference, called by the Royal Society to consider the future of the International Catalogue of Scientific Literature, was held in London September 28 and 29, 1920. The following delegates attended, representing the countries named: Denmark, Prof. M. Knudsen; France, M. A. Lacroix; Holland, Dr. G. van Rijnberk; Japan, Dr. Hantaro Nagaoka; Norway, Mr. Rolf Laache; Sweden, Baron Alströmer; Switzerland, Dr. Hermann Escher, Dr. Marcel Godet, Dr. H. Field; United States, Dr. Robert M. Yerkes (National Research Council), Dr. L. E. Dickson (National Academy of Sciences), Mr. L. C. Gunnell (Smithsonian Institution); India, Sir H. H. Hayden, F. R. S.; New Zealand, Prof. A. Denby, F. R. S.; Victoria, Prof. E. W. Skeats; South Africa, Sir Thomas Muir, F. R. S.; West Australia, Mr. C. B. Rushton. Representing the Royal Society: Sir Joseph Thomson, president R. S.; Sir David Prain, treasurer R. S.; Mr. J. H. Jeans, secretary R. S.; Prof. H. E. Armstrong, F. R. S.; Dr. F. A. Bather, F. R. S.; Dr. P. C. Mitchell, F. R. S.; Sir Arthur Schuster, F. R. S. There were also present Dr. S. I. Franz (United States of America), representing the Rockefeller Foundation, and Sir F. G. Ogilvie and Mr. L. S. Lloyd (Great Britain). Two Italian delegates, Prof. Raffaello Nasini and Comm. Ing. Ernesto Mancini, were delayed on the journey and did not arrive until the end of the conference. These two distinguished Italian representatives were very earnest in their desire to see the catalogue continued, and both agreed with the decisions, of the other delegates.

After two days taken up in considering the financial situation as presented by the Royal Society, and discussion of the general affairs of the enterprise, the following resolutions were agreed on unanimously:

1. That the catalogue should be temporarily continued in its present form for the year 1915 and possibly also as a single issue for the period 1916–1920 provided adequate financial support can be obtained.

That at the earliest possible date opportunity be taken to reconsider the whole character of the subsequent work of organization.

That one of the first questions to be considered be the possibility of converting the International Catalogue of Scientific Literature into a cumulative subject and authors' index, the volumes of which shall be published at intervals of 3, 5, or 10 years, in accordance with the status and needs of their respective sciences; and that the materials shall be obtained so far as practicable in cooperation with the abstracting journals of the world and other agencies affording rapid information, including regional bureaus.

It was also agreed unanimously—

2. That, inasmuch as the Royal Society is no longer able to accept financial responsibility for the catalogue, it is essential that adequate financial support, including working capital, be provided.

Further, the opinion was expressed by the delegates generally (other than those representing the Royal Society) that the Royal Society, being relieved of financial responsibility, should otherwise act as heretofore.

Finally the conference resolved—

3. That a committee be appointed to draw up definite proposals in accordance with the above resolutions and that the report of the committee be forwarded to the council of the Royal Society.

4. That the council of the Royal Society be requested to take such steps with regard to the recommendations of this committee as they think fit.

The committee appointed under the resolution 3 made the following recommendations, subject to adequate financial provision being assured:

(*a*) That the central bureau be instructed to proceed with publication of the 1915 issue.

(*b*) That the central bureau be further instructed to collect material for the period 1916–1920 with a view to the early publication of the issue 1916–1920.

The committee further recommended—

(*c*) That the council of the Royal Society request the executive committee of the International Council of the Catalogue to proceed to collect information as to the various issues raised in the foregoing resolutions of the conference and to report at as early a date as possible.

The fourteenth issue was not completed at the time of the meeting. Below is a table showing the receipts and expenditures of the London central bureau on account of the first 13 issues:

	Receipts.	Expenditures.
	£. s. d.	£. s. d.
First issue	7,083 10 3	7,117 0 0
Second issue	7,168 16 4	7,115 2 7
Third issue	7,152 15 10	6,807 5 1
Fourth issue	7,010 14 1	7,009 19 5
Fifth issue	6,745 13 10	8,216 17 8
Sixth issue	6,747 14 7	7,896 10 1
Seventh issue	7,372 17 1	7,493 1 10
Eighth issue	7,079 4 6	7,281 1 5
Ninth issue	7,212 17 7	6,917 3 8
Tenth issue	7,183 14 5	7,271 12 7
Eleventh issue [1]	6,796 18 4	6,894 16 8
Twelfth issue	5,580 17 10	6,752 11 6
Thirteenth issue [2]	5,611 9 10	8,783 11 6
	88,747 4 6	95,555 14 0

[1] The war began before the eleventh issue was completed, so that the falling off in receipts during the last three years may be attributed to loss of subscriptions from Germany, Austria, Hungary, Poland, and Belgium.

[2] The increased expenditures on the thirteenth issue arises from that issue having taken two years instead of one to complete.

From this table it will be seen that on the completion of the tenth issue, before war conditions interfered, receipts and expenditures

tically balanced, and it is apparent that had not these unex-
ed conditions arisen the whole enterprise would have been self-
ining. Before war began many changes were contemplated to
rove the service rendered by the catalogue and bring it more
ly to the high standard set by the original brilliantly conceived
which so many of the world's leading men of science had taken
in formulating and which was referred to in some detail in the
annual report of this bureau.

here is and has been no question of the need and value of an
rnational Catalogue of Scientific Literature, and it is the opinion
lmost everyone interested in such matters that no better plan has
been presented to accomplish the ends sought. Any new en-
rise would lack the greatest present asset of the catalogue, which
ie official support of most of the civilized nations, and it is with
support practically assured for the future that the catalogue
start in its endeavor to gain the financial assistance necessary
ompensate for losses caused by the late war.

ew agencies, such as abstract journals representing all branches
science, are to be undertaken by other organizations, and it is
ough cooperation with these that the catalogue is to be produced
he future, thus meeting all requirements of scientific workers as
l as those of reference libraries and of those engaged in general
estigation.

rom the attitude of the foreign delegates at the conference it is
arent that there exists no lack of interest or desire to continue
work, but all of these countries are now under unprecedented
ncial strain, which is greatly increased by abnormal rates of ex-
nge, so for the present, at least, their aid must be less than it
ld be during normal times. There is in this country a growing
rest in supplying the needs of scientific workers, and plans are
er way to publish abstract journals in all branches of science not
ady represented. These plans were brought to the notice of the
ference by the American delegates, representing the National
demy of Sciences, the National Research Council, and by a repre-
ative of the Rockefeller Foundation, who was present. From
ements there made it appears that the money needed to establish
e enterprises is available and the resolutions of the conference
into account cooperation with these new organizations for the
mon benefit of the publishing bodies and of scientific investi-
rs.

Very respectfully, yours,

LEONARD C. GUNNELL,
Assistant in Charge.

t. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 9.

REPORT ON THE LIBRARY.

SIR: I have the honor to submit the following report on the activities of the library of the Smithsonian Institution for the fiscal year ended June 30, 1921:

The number of packages received was 27,327, an increase over the preceding year of 3,577. Of these 25,156 were received by mail and 2,171 through the International Exchange Service. Many of the packages received through the international exchanges, it might be mentioned, were exceptionally large, consisting of publications issued during the years 1914 to 1920, when it was not possible to send them on account of the war.

SMITHSONIAN MAIN LIBRARY.

In order that material received for the Smithsonian Library may be made available to the public at the earliest possible moment, publications have been transmitted daily, as in years past, to the Smithsonian deposit in the Library of Congress. The number of publications so transmitted was 6,250, composed of 4,910 complete volumes, 607 parts of volumes, 721 pamphlets, and 12 charts. The accession numbers extended from 534,619 to 537,229. Four thousand four hundred and sixty-four foreign government documents, presented to the Smithsonian Institution, were transferred to the Library of Congress in accordance with the established practice.

Material from abroad has been steadily coming in, and the receipts for the year have been much larger than was anticipated. The number of authors' reprints and theses from German universities and institutes of technology has been exceptionally large, covering the years 1914 to 1920. Theses were received from the universities of Berlin, Breslau, Frankfurt-am-Main, Freiburg-im-Breisgau, Halle-an-der Saale, Heidelberg, Kiel, Leipzig, Marburg, Zürich, Dorpat, Helsingfors, Lund, Paris, Amsterdam, Brussels, Delft, Ghent, Leiden, and Utrecht; and from the institutes of technology at Berlin, Braunschweig, Stockholm, Utrecht and Zürich.

Cataloguing.—As will be seen by comparison, the cataloguing accomplished has been more than double that of last year.

	1921	1920
Volumes catalogued	6,252	2,332
Volumes recatalogued	75	868
Library of Congress cards filed	757	618
Catalogue cards typed	4,920	2,200
New titles added to author catalogue	2,517	000

arge as the amount of cataloguing has been, however, in comison with last year, it has not been sufficient to meet the demands sioned by the receipts; and many of the reprints and theses ain uncatalogued.

eriodicals.—The number of entries at the periodical desk was 08. Nine hundred and forty-five volumes were completed.

xchanges.—The securing of publications in exchange for the pletion of sets in the Library of Congress has been continued, h the following results:

nber of want cards received from—	
Smithsonian division	291
Periodical division	90
Order division	48
Total	429

nber of publications secured for—	Vols.	Parts.
Smithsonian division	290	255
Periodical division	19	201
Order division	5	3
Total	324	459

OFFICE LIBRARY.

Accessions to the office library, including the aeronautical collecn, the collection of Buonaparteana, the art room collection, and e employees' library, numbered 317 volumes, 4 parts of volumes, d 468 pamphlets. This does not include many periodicals, of hich the current numbers are kept on file in the reading room, and e completed volumes transmitted at the end of the year to the ibrary of Congress. The library is greatly indebted to Dr. Frank igglesworth Clarke for the presentation of his unique collection of uthors' reprints on the determination of the atomic weights, numering 482 titles.

Circulation.—The total circulation of the Library was 3,485, consting of 2,708 magazines borrowed from the reading room, 506 ooks from the employees' library, and 171 from the reference room. lany volumes which are not permitted to leave the building were onsulted, especially reference works and the books of the aeroautical collection and the De Peyster collection.

Bibliography.—The second volume of the Bibliography of Aeroautics, prepared by the assistant librarian, covering the period from 09 to 1916, was completed and published by the National Advisory ommittee for Aeronautics. This volume contains approximately ,000 citations and cross references, and supplements the material ntained in the volume published by the Smithsonian Institution volume 55 of the Smithsonian Miscellaneous Collections. The

aeronautical library is growing and becoming more and more important.

MUSEUM LIBRARY.

Continued interest has been manifested during the year in the increase of the scientific collections of the United States National Museum. Among those who have donated valuable material to the library may be mentioned Dr. J. M. Aldrich, Mr. H. S. Barber, Mr. A. H. Clark, Dr. William H. Dall, Dr. O. P. Hay, Dr. W. H. Holmes, Dr. Walter Hough, Dr. Aleš Hrdlička, Mr. W. R. Maxon, Dr. G. S. Miller, Dr. C. W. Richmond, Mr. J. H. Riley, Mr. S. A. Rohwer, Mr. W. Schaus, Mr. W. L. Schmitt, Dr. R. W. Schufeldt, Dr. L. Stejneger, Mr. H. B. Swales, Dr. Charles D. Walcott, and the late Dr. Joseph Paxson Iddings.

Especially worthy of mention is the library of the late Dr. Iddings, comprising upward of 1,000 books and pamphlets, chiefly on geological subjects. Dr. Iddings, as is well known, was one of America's leading petrologists, and his 40 years' accumulation of authors' excerpts on this branch of science was unusually large. The donation, made through his sister, Mrs. Francis D. Cleveland, is therefore important. Indeed it forms the most important single acquisition to the geological section of the library since the foundation of the department in 1880.

The geological and paleontological collections have been further augmented during the year by the continued gifts of the Secretary of the Smithsonian Institution, Dr. Charles D. Walcott, most of the books donated being volumes of highly technical content and of great value to those undertaking advanced researches along these lines.

The additions to the sectional library of the division of mollusks through the gift of Dr. William H. Dall have made possible a continued study in the United States National Museum of the more recently discovered mollusks and tertiary fossils. The library is greatly indebted to Dr. Dall, during these times when scientific books of this character are so expensive and so difficult to secure, for the continued interest year by year in the selection and presentation of so many volumes for this section. The number of titles added this year by Dr. Dall was 317.

Accessions.—Four thousand seven hundred and sixty volumes were accessioned during the year, including 2,041 completed volumes and 2,719 pamphlets. The number of books in the library is now 150,067, of which 58,658 are bound volumes and 91,409 pamphlets and unbound papers.

Cataloguing.—Seven hundred and seventy-seven volumes and 2,643 pamphlets were catalogued.

Periodicals.—The number of periodicals entered was 15,427.

Loans.—The number of books loaned was 7,432. Of these, 1,778 were borrowed from the Library of Congress, and 105 from other libraries.

Binding.—Owing to the increased cost of binding, it has been possible to have only 692 books bound, most of these being volumes which could not be bound last year, when the funds for this purpose were exhausted in January, the allotment being sufficient for a period of six months only. This year the funds were exhausted in November, some two months earlier. An increased allotment for binding is earnestly recommended.

Technological series.—The compiling of a subject and title catalogue for material in the technological series is slowly progressing, and it is hoped that it may be brought to completion within the course of a year. Additions to the series, exclusive of duplicates, number 216 bound volumes, 133 pamphlets, 6,372 periodicals. To the scientific depository catalogue, 1,180 cards have been added, including author, title, and subject entries. The books and periodicals loaned number 210.

Sectional libraries.—Following is a list of sectional libraries:

Administration.
Administrative assistant's office.
American archeology.
Anthropology.
Birds.
Botany.
Editor's office.
Ethnology.
Fishes.
Food.
Geology.
Graphic arts.
History.
Insects.
Invertebrate paleontology.
Mammals.
Marine invertebrates.
Medicine.
Mechanical technology.
Minerals.
Mineral technology.
Mollusks.
Old World archeology.
Paleobotany.
Photography.
Physical anthropology.
Property clerk.
Registrar's office.
Reptiles and batrachians.
Superintendent's office.
Taxidermy.
Textiles.
Vertebrate paleontology.
War library.
Wood technology.

ASTROPHYSICAL OBSERVATORY LIBRARY.

Additions to the library of the Astrophysical Observatory numbered 72 volumes, 12 parts of volumes, and 37 pamphlets.

BUREAU OF AMERICAN ETHNOLOGY LIBRARY.

The report of operations of the library of the Bureau of American Ethnology will be found in the report of that bureau. The library is administered under the direct care of the chief of that bureau.

NATIONAL GALLERY OF ART LIBRARY.

The library of the National Gallery of Art was during the past fiscal year administered under the direction of the library of the United States National Museum, and its accessions are included in the statistics given for that library.

FREER GALLERY OF ART LIBRARY.

Accessions to the library of the Freer Gallery of Art, including publications presented to the Smithsonian Institution and deposited there for reference use in connection with the Freer collections, number 113. Especially worthy of mention is the gift by Messrs. Ton-Ying & Co., of New York, in commemoration of Mr. Charles L. Freer, of 33 rare Chinese manuscripts of the Ming period, constituting 108 volumes.

NATIONAL ZOOLOGICAL PARK LIBRARY.

Eleven volumes were added to the library of the National Zoological Park during the year.

SUMMARY OF ACCESSIONS.

The accessions during the year, with the exception of those for the library of the Bureau of American Ethnology, may be summarized as follows:

To the Smithsonian deposit in the Library of Congress, including parts to complete sets	6,250
To the Smithsonian office, Astrophysical Observatory, Freer Gallery of Art, and National Zoological Park libraries	938
To the United States National Museum library, including accessions for the National Gallery of Art	4,760
Total	11,948

Respectfully submitted.

PAUL BROCKETT,
Assistant Librarian.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 10.

REPORT ON THE PUBLICATIONS.

SIR: I have the honor to submit the following report on the pub-:ations of the Smithsonian Institution and its branches during the :ar ending June 30, 1921.

The Institution proper published during the year 7 papers in the ries of Miscellaneous Collections, 1 annual report and pamphlet pies of 27 articles in the appendix to the report, a reprint of the nithsonian Mathematical Tables, and two special publications. he Bureau of American Ethnology published three bulletins and list of the publications of the bureau. The United States National useum issued 1 annual report, 8 bulletins, 4 separate parts of bul-tins, 51 separate papers from the proceedings, and 5 parts of)lumes in the series Contributions from the United States National erbarium.

The total number of publications distributed by the Smithsonian id its branches was 142,208, which includes 255 volumes and sepa-tes of the Smithsonian Contributions to Knowledge, 12,922 volumes id separates of the Smithsonian Miscellaneous Collections, 24,423)lumes and separates of the Smithsonian annual reports, 89,000)lumes and separates of the National Museum publications, 12,795 iblications of the Bureau of American Ethnology, 2,000 special iblications, 14 volumes of the Annals of the Astrophysical Observa-ry, 40 reports on the Harriman Alaska expedition, 414 reports of e American Historical Society, and 345 publications presented to it not issued by the Smithsonian Institution.

SMITHSONIAN MISCELLANEOUS COLLECTIONS.

Of the Smithsonian Miscellaneous Collections, volume 71, 1 paper as issued; volume 72, 6 papers; in all, 7 papers, as follows:

VOLUME 71.

). 1. Smithsonian Physical Tables, Seventh Revised Edition. Prepared by Frederick E. Fowle. September 21, 1920. xlvi+450 pp. (Publ. 2539.)

VOLUME 72.

). 3. Reports upon two collections of mosses from British East Africa. By H. N. Dixon. September 1, 1920. 20 pp., 2 pls. (Publ. 2583.)

). 4. Diagnoses of some new genera of birds. By Robert Ridgway. December 6, 1920. 4 pp. (Publ. 2588.)

No. 5. New selaginellas from the western United States. By William R. Maxon. December 22, 1920. 10 pp., 6 pls. (Publ. 2589.)

No. 6. Explorations and field-work of the Smithsonian Institution in 1920. May 12, 1921. 126 pp., 138 figs. (Publ. 2619.)

No. 7. Sea-lilies and feather stars. By Austin H. Clark. April 28, 1921. 43 pp., 16 pls. (Publ. 2620.)

No. 9. Neoabbottia, a new cactus genus from Hispaniola. By N. L. Britton and J. N. Rose. June 15, 1921. 6 pp., 4 pls. (Publ. 2651.)

SMITHSONIAN ANNUAL REPORTS.

REPORT FOR 1918.

The complete volume of the Annual Report of the Board of Regents for 1918, together with pamphlet copies of the papers in the general appendix, was received from the Public Printer during the year.

Annual Report of the Board of Regents of the Smithsonian Institution, showing operations, expenditures, and condition of the Institution for the year ending June 30, 1918. xii+612 pp., 54 pls., 128 text figs. (Publ. 2549.)

The appendix contained the following papers:

The Discovery of Helium, and What Came of It, by C. G. Abbot. 5 pp. (Publ. 2550.)

An Account of the Rise of Navigation, by R. H. Curtiss. 11 pp. (Publ. 2551.)

The Tornadoes of the United States, by Prof. Robert DeC. Ward. 6 pp., 1 pl. (Publ. 2552.)

Wind Power, by James Carlill. 9 pp. (Publ. 2553.)

A Tribute. Samuel Pierpont Langley: Pioneer in Practical Aviation, by Henry Leffman. 10 pp., 9 pls. (Publ. 2554.)

Twentieth Century Physics, by R. A. Millikan. 19 pp. (Publ. 2555.)

The Experiments of Dr. P. W. Bridgman on the Properties of Matter When Under High Pressure. Introductory Note by C. G. Abbot. 19 pp., 1 pl. (Publ. 2556.)

The Problem of Radioactive Lead, by Theodore W. Richards. 14 pp. (Publ. 2557.)

Sphagnum Moss: War Substitute for Cotton in Absorbent Surgical Dressings, by Prof. George E. Nichols. 13 pp., 4 pls. (Publ. 2558.)

History of Military Medicine and its Contributions to Science, by Col. W. P. Chamberlain. 14 pp. (Publ. 2559.)

Some Problems of International Readjustment of Mineral Supplies as Indicated in Recent Foreign Literature, by Eleanora F. Bliss. 18 pp. (Publ. 2560.)

Reptile Reconstructions in the United States National Museum, by Charles W. Gilmore. 10 pp., 6 pls. (Publ. 2561.)

A Pleistocene Cave Deposit in Western Maryland, by J. W. Gidley. 6 pp., 6 pls. (Publ. 2562.)

Paleobotany: A Sketch of the Origin and Evolution of Floras, by Edward W. Berry. 118 pp., 6 pls. (Publ. 2563.)

The Direct Action of Environment and Evolution, by Prince Kropotkin. 18 pp. (Publ. 2564.)

The Law of Irreversible Evolution, by Branislav Petronievics. 11 pp. (Publ. 2565.)

The Fundamental Factor of Insect Evolution, by S. S. Chetverikov. 8 pp., 1 pl. (Publ. 2566.)

The Psychic Life of Insects, by E. L. Bouvier. 8 pp. (Publ. 2567.)

Sexual Selection and Bird Song, by Chauncey J. Hawkins. 12 pp. (Publ. 2568.)

Marine Camouflcurs and Their Camouflage: The Present and Prospective Significance of Facts Regarding the Coloration of Tropical Fishes, by W. H. Longley. 10 pp., 5 pls. (Publ. 2569.)

Foot-Plow Agriculture in Peru, by O. F. Cook. 4 pp., 4 pls. (Publ. 2570.)

Sun Worship of the Hopi Indians, by J. Walter Fewkes. 33 pp., 11 pls. (Publ. 2571.)

A Constitutional League of Peace in the Stone Age of America: The League of the Iroquois and Its Constitution, by J. N. B. Hewitt. 18 pp. (Publ. 2572.)

The Problem of Degeneracy, by H. F. Tredgold. 15 pp. (Publ. 2573.)

History in Tools, by W. M. Flinders Petrie. 10 pp. (Publ. 2574.)

The Background of Totemism, by E. Washburn Hopkins. 11 pp. (Publ. 2575.)

A Great Naturalist: Sir Joseph Hooker, by Sir E. Ray Lankester. 16 pp. (Publ. 2576.)

REPORT FOR 1919.

The general appendix to the report for 1919, which was still in press at the close of the year, contains the following papers:

Modern theories of the spiral nebulae, by Heber D. Curtis.

A determination of the deflection of light by the sun's gravitational field, from observations made at the total eclipse of May 29, 1919, by Sir F. W. Dyson, A. S. Eddington, and C. Davidson

Wireless telephony, by N. H. Slaughter.

Radium and the electron, by Sir Ernest Rutherford.

The "HD–4." A 70-miler with remarkable possibilities developed at Dr. Graham Bell's laboratories on the Bras d'Or Lakes, by William Washburn Nutting.

Natural resources in their relation to military supplies, by Arthur D. Little.

Glass and some of its problems, by Sir Herbert Jackson.

The functions and ideals of a national geological survey, by F. L. Ransome.

The influence of cold in stimulating the growth of plants, by Frederick V. Coville.

Floral aspects of British Guiana, by A. S. Hitchcock.

Milpa agriculture, a primitive tropical system, by O. F. Cook.

On the extinction of the mammoth, by H. Neuville.

A preliminary study of the relation between geographical distribution and migration, with special reference to the Palaearctic region, by R. Meinertzhagen.

The necessity of State action for the protection of wild birds, by Walter E. Collinge.

Glimpses of desert bird life in the Great Basin, by Harry C. Oberholser.

The Division of Insects in the United States National Museum, by J. M. Aldrich.

The seventeen-year locust, by R. E. Snodgrass.

Entomology and the war, by L. O. Howard.

Two types of southwestern cliff houses, by J. Walter Fewkes.

On the race history and facial characteristics of the aboriginal Americans, by W. H. Holmes.

The opportunity for American archeological research in Palestine, by James A. Montgomery.

The differentiation of mankind into racial types, by Arthur Keith.
The exploration of Manchuria, by Arthur de C. Sowerby.
The origin and beginnings of the Czechoslovak people, by Jindřich Matiegka.
Geographic education in America, by Albert Perry Brigham.
Progress in national land reclamation in the United States, by C. A. Bissell.
Richard Rathbun, by Marcus Benjamin.
A great chemist: Sir William Ramsay, by Ch. Moureu.

REPORT FOR 1920.

The report of the executive committee and proceedings of the Board of Regents of the Institution and report of the secretary, both forming part of the annual report of the Board of Regents to Congress, were issued in pamphlet form in November, 1920.

Report of the executive committee and proceedings of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1920. 19 pp. (Publ. 2587.)

Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1920. 110 pp., 1 pl. (Publ. 2586.)

The general appendix to this report, which was in press at the close of the year, contains the following papers:

Studying the sun's heat on mountain peaks in desert lands, by C. G. Abbot.
The habitability of Venus, Mars, and other worlds, by C. G. Abbot.
Giant suns, by H. H. Turner.
A bundle of meteorological paradoxes, by W. J. Humphreys.
The determination of the structure of crystals, by Ralph W. G. Wyckoff.
Dr. Aston's experiments on the mass spectra of the chemical elements, with introduction by C. G. Abbot.
Vitamins, by W. D. Halliburton.
Soil acidity—its nature, measurement, and relation to plant distribution, by Edgar T. Wherry.
The chemistry of the earth's crust, by Henry S. Washington.
Major causes of land and sea oscillations, by E. O. Ulrich.
The Bryozoa, or moss animals, by R. S. Bassler.
The horned dinosaurs, by Charles W. Gilmore.
Rhythm in nature, by F. W. Flattely.
Parasitism and symbiosis in their relation to the problem of evolution, by Maurice Caullery.
Local suppression of agricultural pests by birds, by W. L. McAtee.
The occult senses in birds, by Herbert H. Beck.
Adventures in the life of a fiddler crab, by O. W. Hyman.
The senses of insects, by N. E. McIndoo.
The resplendent shield-bearer and the ribbed cocoon-maker: Two insect inhabitants of the orchard, by R. E. Snodgrass.
The origin of insect societies, by Auguste Lameere.
The botanical gardens of Jamaica, by William R. Maxon.
Narcotic daturas of the Old and New World; an account of their remarkable properties and their uses as intoxicants and in divination, by William E. Safford.
Effect of the relative length of day and night on flowering and fruiting of plants, by W. W. Garner and H. A. Allard.

Fire worship of the Hopi Indians, by J. Walter Fewkes.
Racial groups and figures in the Natural History Building of the United States National Museum, by Walter Hough.
Notes on the dances, music, and songs of the ancient and modern Mexicans, by Auguste Genin.
The Ralph Cross Johnson collection in the National Gallery at Washington, D. C., by George B. Rose.

PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM.

The publications of the National Museum are: (*a*) The annual eport; (*b*) the Proceedings of the United States National Museum; nd (*c*) the Bulletin of the United States National Museum, which ncludes the Contributions from the United States National Herbaium. The editorship of these publications is vested in Dr. Marcus enjamin.

During the year ending June 30, 1921, the Museum published 1 nnual report, 8 complete bulletins, 4 parts of bulletins, 5 parts of olumes in the series Contributions from the United States National erbarium, and 51 separates from the proceedings.

The issues of the bulletin were as follows:

ulletin No. 106 (plates). North American early tertiary Bryozoa. By Ferdinand Canu and Ray S. Bassler.
ulletin No. 109. Contributions to a history of American State geological and natural history surveys. By George P. Merrill.
ulletin No. 110. Osteology of the carnivorous dinosauria in the United States National Museum, with special reference to the genera Antrodemus (Allosaurus) and Ceratosaurus. By Charles Whitney Gilmore.
ulletin No. 111. A monograph of the east American scaphopod mollusks. By John B. Henderson.
ulletin No. 112. Summary of the marine shell-bearing mollusks of the northwest coast of America, from San Diego, Calif., to the Polar Sea, mostly contained in the collection of the United States National Museum, with illustrations of hitherto unfigured species. By William Healey Dall.
ulletin No. 115. The fossil crinoid genus Dolatocrinus and its allies. By Frank Springer.
ulletin No. 116. The dipterous genus Dolichopus latreille in North America. By M. C. Van Duzee, F. R. Cole, and J. M. Aldrich.
ulletin No. 117. The distribution of bird life in the Urubamba Valley of Peru. A report on the birds collected by the Yale University—National Geographic Society's expeditions. By Frank M. Chapman.

Of the separate papers of bulletins, the following were issued:

ulletin 100. Contributions to the biology of the Philippine Archipelago and adjacent regions. Volume 1, part 7: The macrouroid fishes of the Philippine Islands and the East Indies. By Charles Henry Gilbert and Carl L. Hubbs.
ulletin 100. Contributions to the biology of the Philippine Archipelago and Adjacent Regions. Volume 1, part 8: Polychaetous annelids collected by the United States Fisheries steamer *Albatross* in the waters adjacent to the Philippine Islands in 1907–1910. By A. L. Treadwell.

Bulletin 100. Contributions to the biology of the Philippine Archipelago and adjacent regions. Volume 1, part 9: Polychaetous annelids collected by the United States Fisheries steamer *Albatross* during the Philippine Expedition of 1907–1909. By Ruth A. Hoagland.

Bulletin 104. The Foraminifera of the Atlantic Ocean. Part 2. Lituolidae. By Joseph Augustine Cushman.

Of the separates from the proceedings, 5 were from volume 57, 29 from volume 58, and 17 from volume 59.

PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY.

The publications of the bureau are described in detail in Appendix 4 of this report. The editorial work of the bureau is under the direction of Mr. Stanley Searles, editor.

During the past year three bulletins and a list of the publications of the bureau were published, as follows:

Bulletin 67. Alsea texts and myths. By Leo Frachtenberg. 304 pp.

Bulletin 71. Native cemeteries and forms of burial east of the Mississippi. By David I. Bushnell, jr. 160 pp., 17 pls.

Bulletin 72. The owl sacred pack of the Fox Indians. By Truman Michelson. 83 pp., 4 pls.

List of the publications of the Bureau of American Ethnology.

There were in press at the close of the year five annual reports and seven bulletins. The bulletins were as follows:

Bulletin 73. Early history of the Creek Indians and their neighbors. By John R. Swanton.

Bulletin 74. Excavation of a site at Santiago Ahuitzotla, D. F., Mexico. By Alfred M. Tozzer.

Bulletin 75. Northern Ute music. By Frances Densmore.

Bulletin 76. Archeological excavations in the Ozark region of central Missouri. By Gerard Fowke.

Bulletin —. Handbook of the Indians of California. By A. L. Kroeber.

Bulletin —. Mandan and Hidatsa music. By Frances Densmore.

Bulletin —. Villages of the Algonquian, Siouan, and Caddoan tribes west of the Mississippi. By David I. Bushnell, jr.

REPORT OF THE AMERICAN HISTORICAL ASSOCIATION.

The annual reports of the American Historical Association are transmitted by the association to the secretary of the Smithsonian Institution, and are communicated to Congress under the provisions of the act of incorporation of the association.

There were published during the year the report for 1917 and volume 2 of the report for 1918. Volume 1 of the report for 1918, volumes 1 and 2 of the report for 1919, and the supplements to the reports for 1918 and 1919, entitled "Writings in American History," were in press at the close of the year.

REPORT OF THE NATIONAL SOCIETY OF THE DAUGHTERS OF THE AMERICAN REVOLUTION.

The manuscript of the Twenty-third Annual Report of the National Society of the Daughters of the American Revolution was transmitted to Congress according to law in December, 1920.

THE SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION.

The editor continued to serve as secretary of the Smithsonian Advisory Committee on Printing and Publication. This committee passes upon all manuscripts offered for publication by the Institution or its branches and considers all forms of routine, blanks, and such matters as pertain to printing and publication. Eight meetings were held during the year and 94 manuscripts were acted upon.

Respectfully submitted.

W. P. TRUE, *Editor.*

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

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REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1922

(Publication 2709)

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

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REPORT

OF THE

CRETARY OF THE SMITHSONIAN INSTITUTION,

CHARLES D. WALCOTT,

FOR THE YEAR ENDING JUNE 30, 1922.

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the Board of Regents of the Smithsonian Institution:

ENTLEMEN: I have the honor to submit herewith the annual ort of the activities and condition of the Smithsonian Institution its branches during the year ending June 30, 1922. The affairs the Institution proper (together with brief summaries of the rations of the various branches) are given on pages 1 to 25 this report, and the appendixes contain somewhat detailed ounts of the year's work, written by the head of each of the nches. These include reports on the United States National seum, the National Gallery of Art, the Freer Gallery of Art, Bureau of American Ethnology, the International Exchanges, National Zoological Park, the Astrophysical Observatory, the ted States Regional Bureau of the International Catalogue of entific Literature, the Smithsonian Library, and the publica- s of the Institution and its branches.

THE SMITHSONIAN INSTITUTION.

THE ESTABLISHMENT.

he Smithsonian Institution was created by act of Congress in 6, according to the terms of the will of James Smithson, of gland, who in 1826 bequeathed his property to the United States America "to found at Washington, under the name of the Smith- ian Institution, an establishment for the increase and diffusion knowledge among men." In receiving the property and accept- the trust Congress determined that the Federal Government was thout authority to administer the trust directly, and therefore astituted an "establishment" whose statutory members are "the esident, the Vice President, the Chief Justice, and the heads of the ecutive departments."

THE BOARD OF REGENTS.

The affairs of the Institution are administered by a Board of Regents whose membership consists of "the Vice President, the Chief Justice, three Members of the Senate, and three Members of the House of Representatives, together with six other persons other than Members of Congress, two of whom shall be resident in the city of Washington and the other four shall be inhabitants of some State, but no two of them of the same State." One of the Regents is elected chancellor by the board; in the past the selection has fallen upon the Vice President or the Chief Justice; and a suitable person is chosen by them as secretary of the Institution, who is also secretary of the Board of Regents and the executive officer directly in charge of the Institution's activities.

In regard to the personnel of the board, the following changes occurred during the year: Chief Justice William H. Taft became a member of the board by virtue of his office; Representative Albert Johnson, of the State of Washington, was appointed to succeed Representative John A. Elston, who died during the year; and Dr. Alexander Graham Bell retired from the board at the expiration of his term.

The roll of the Regents at the close of the fiscal year was as follows: Calvin Coolidge, Vice President of the United States, chancellor; Chief Justice William H. Taft; Henry Cabot Lodge, Member of the Senate; A. Owsley Stanley, Member of the Senate; Medill McCormick, Member of the Senate; Lemuel P. Padgett, Member of the House of Representatives; Frank L. Greene, Member of the House of Representatives; Albert Johnson, Member of the House of Representatives; George Gray, citizen of Delaware; Charles F. Choate, jr., citizen of Massachusetts; John B. Henderson, citizen of Washington, D. C.; Henry White, citizen of Washington, D. C., and Robert S. Brookings, citizen of Missouri.

The board held its annual meeting on December 8, 1921. The proceedings of that meeting, as well as the annual financial report of the executive committee, have been printed as usual for the use of the Regents, while such important matters acted upon as are of public interest are reviewed under appropriate heads in the present report of the secretary. A detailed description of disbursements from the Government appropriations under the direction of the Institution for the maintenance of the National Museum, the National Zoological Park, and other branches will be submitted to Congress by the secretary in the usual manner in accordance with the law.

GENERAL CONSIDERATIONS.

Desiring to increase the research output of the Institution, your secretary called a meeting in May of this year of the scientific

e Institution and its branches to consider ways and means
rating and carrying out a program of more extensive
esearch. At this meeting a committee on research was
ith Dr. George P. Merrill, head curator of geology, as
which will consider the subject this summer and it is
vill be prepared in the fall to offer a definite program.
'at need of the Institution is for a larger endowment to
to extend the scope of its activities in the "increase and
of knowledge among men." During the 76 years of its
except for several generous contributions for specific
ıe income of the Institution has not been materially in-
With the great increase in its scientific activities and
publications, it becomes more and more difficult to make
d income cover the mounting expense, and many oppor-
carry on valuable scientific investigations must be passed
year. It is hoped that some one, recognizing the ad-
s position of the Institution for promoting scientific work
a, will provide a suitable endowment.

FINANCES.

'manent investments of the Institution consist of the

ı the Treasury of the United States	$1,000,000

CONSOLIDATED FUND.

neous securities carried at a cost of $177,965.28, either
or acquired by gift, and constituting the consolidated
ely:

Railroad Co. guaranteed 4 per cent first mortgage bonds, 361	$42,000
lectric Illuminating Co. first mortgage 5 per cent gold e in 1939	10,000
peka & Santa Fe Railway Co. 4 per cent general mortgage e in 1995, gift	2,000
& Ohio Railroad Co. first consolidated mortgage 5 per cent e in 1939, gift	2,000
Ohio Railroad Co. 5 per cent refunding general mortgage e in 1995, gift	5,000
Co. 7 per cent gold bonds, due in 1944, gift	6,000
yers Tobacco Co. 7 per cent gold bonds, due in 1944, gift	6,000
entral & Hudson River Railroad Co., 4 per cent gold de- onds, due in 1934	4,000
gstown, Ohio, 6 per cent municipal bonds, due in 1928	3,000
7 per cent trust notes on improved property in the District bia, due in 1925	5,000
cific—Great Northern joint convertible 6½ per cent gold e in 1936	41,500

New York Central Railroad Co. refunding and improvement 5 per cent bonds, due in 2013 ..... $10,0
Brooklyn Rapid Transit Co.[1] 5 per cent secured gold notes due in 1918 .. 3,5
United States first Liberty loan 2
United States second Liberty loan 1
United States third Liberty loan 10,1
United States fourth Liberty loan .....
United States war-savings stamps, series of 1918 1
Atchison, Topeka & Santa Fe Railway Co. 5 per cent preferred stock, gift ..... shares ..
American Smelting & Refining Co. 7 per cent preferred stock, gift ..... do ....
Baltimore & Ohio Railroad Co. 4 per cent preferred stock, gift ..... do ....
California Electric Generating Co. 6 per cent preferred stock, gift ..... do ....
Electric Bond & Share Co. 6 per cent preferred stock, gift .... do ....

The sums invested for each specific fund or securities acquired gift are described as follows:

Fund.	United States Treasury.	Consolidated fund.	To
Smithson fund	$727,640.00	$1,429.14	$72
Habel fund	500.00		
Hodgkins general fund	116,000.00	37,275.00	15
Hodgkins specific fund	100,000.00		10
Rhees fund	500.00	199.00	
Avery fund	14,000.00	20,489.80	3
Addison T. Reid fund	11,000.00	3,679.00	1
Lucy T. and George W. Poore fund	26,670.00	8,444.00	3
George K. Sanford fund	1,100.00	374.00	
Chamberlain fund		35,000.00	3
Bruce Hughes fund		9,894.76	
Lucy H. Baird fund		1,260.58	
Virginia Purdy Bacon fund		46,900.00	4
Hamilton fund	2,500.00	500.00	
Charles D. and Mary Vaux Walcott research fund		11,520.00	1
Caroline Henry fund		1,000.00	
Total	1,000,000.00	177,965.28	1,1

Mr. B. H. Swales, custodian, section of birds' eggs, contin favor the Institution with his valuable assistance in the form o tributions for the purchase of specimens for the division of This year his contributions have amounted to $400.

Dr. William L. Abbott has contributed $2,000 for the pu of continuing the collecting of natural history specimens. Australian expedition, the expense of which was maintaine tirely by Doctor Abbott for three years, has been successfully cluded, and work in new fields is contemplated in the near f

[1] The traction problem in New York is still unsolved, and the Brooklyn Rapid Co.'s finances remain in the hands of receivers.

Mr. John A. Roebling has made further gifts to the Institution the extent of $15,771.38, to aid in the maintenance of astrophysical tions in Chile and in Arizona and for the publication of scien- c papers.

The executors of the Freer estate have transferred to the Insti- ion 6,546 shares of Parke, Davis & Co., to apply to the Freer iduary fund. The shares of this corporation now received for several specific purposes provided by Mr. Freer are as follows:

	Shares.
rator's fund, Freer Gallery of Art	1,742
urt and grounds fund, Freer Gallery of Art	1,742
urt and grounds, maintenance fund, Freer Gallery of Art	435
eer residuary fund	16,546
Total	20,465

To pay inheritance and Federal taxes, it became necessary, with e approval of the Board of Regents, to place a loan with a local ust company for that purpose. The loan is being gradually re- uced and now amounts to $170,000.

Dividends and interest on securities acquired from the Freer tate have amounted to $83,127.36. Thirty thousand dollars have en expended to liquidate the above-mentioned obligation, and 5,034.48 for purposes prescribed by the testator, including the rchase of art objects.

The sum of $55,823.44, constituting the balance of the building nd, was transferred to the books of the Institution, and $32,122.78 s been expended. With the addition of a credit transferred from nother Freer fund, the balance available for completion and equip- ent of the building is $32,074.97.

The Institution's income for general expenses is received period- ally and at times is in excess of immediate requirements. A part this income is deposited on time at the rate of 3 per cent per num. This year interest acquired principally in this manner nounted to $2,033.93.

The income during the year for current expenses, consisting of terest on permanent investments and other miscellaneous re- urces, was $61,872.14, receipts from Freer bequest $138,950.80, her revenues for specific purposes, $50,850.04; which, with cash hand and subject to check on July 1, 1921, amounting to 1,229.34, constituted a total of $262,902.32.

The disbursements, described more fully in the annual report the executive committee, were classed as follows: General ob- cts of the Institution, $62,749.17; investments and expenditures r specific purposes, $33,553.24; temporary advances in excess of payments, $2,578.50; cash deposited on time, $40,500; disbursed

from revenues of Freer bequest, $117,157.26; and $6,364.15 in cash and deposited subject to check.

The Institution was charged by Congress with the disbursement of the following appropriations for the year ending June 30, 1922:

International Exchanges		$50,000.00
American Ethnology		46,000.00
International Catalogue of Scientific Literature		7,500.00
Astrophysical Observatory		15,500.00
National Museum:		
Furniture and fixtures	$20,000.00	
Heating and lighting	70,000.00	
Heating and lighting (deficiency)	4,000.00	
Preservation of collections	312,620.00	
Preservation of collections (deficiency)	15.84	
Building repairs	10,000.00	
Books	2,000.00	
Books (deficiency)	3.02	
Postage	500.00	
		419,138.86
National Gallery of Art		15,000.00
National Zoological Park		125,000.00
Additional land for Zoological Park		2,500.00
Total		680,638.86

There was also appropriated for printing and binding $91,000, to cover the cost of printing and binding the Smithsonian annual report and reports and miscellaneous printing for Government branches of the Institution.

RESEARCHES AND EXPLORATIONS.

Each year the Institution sends out, as far as its limited funds permit, expeditions for the purpose of exploring scientifically little-known regions of the earth, or to conduct needed field work in more familiar localities, thus furthering one of its principal objects, the "increase of knowledge." It is also able to cooperate advantageously with other institutions by contributing members of its scientific staff to expeditions already organized and financed. The results of the more noteworthy of these expeditions are here described briefly, and the field work of the various branches of the Institution will be found in the appendixes to this report.

GEOLOGICAL EXPLORATIONS IN THE CANADIAN ROCKIES.

During the summer and early fall of 1921 your secretary carried on geological field work in the Canadian Rocky Mountains in continuation of previous years' work in this region. His objects were to secure data on the pre-Devonian strata of the Sawback Range

Ranger Brook Canyon and to conduct a reconnaissance of the e-Devonian formations to the Northwest as far as the headwaters the North Fork of the Saskatchewan River, Alberta.

The field season was an unusually unfavorable one for geological ork. During the three months in the field 35 days were stormy, cloudy and cold, and snow fell on 20 days in August and Sepnber. As a result, not more than one-third of the work planned as accomplished before the party was driven back to the railroad heavy snows.

On our way north we crossed over Pipestone Pass and down the ffleur River. Clearwater River heads in glacial gravels on the st side of the Siffleur about 2 miles north of Pipestone Pass. venty-five miles farther to the northwest at the point where the uth branch (Mistaya Creek), the middle branch (Howse River), d the north branch unite to form the Saskatchewan River there e some beautiful and instructive views of the surrounding mouns. The Mount Forbes massif on the left is a superb mountain ass and in the distant center is Division Mountain at the head of lacier Lake Canyon which we visited in 1919, on the right Survey eak and beyond two unnamed points. The Glacier Lake section the pre-Devonian and Upper Cambrian formations was studied the northern slopes of the Mount Forbes massif.

Twelve miles northeast of Mount Forbes the cliffs of Mount urchison rise high above the dark forested slopes and present a ew of the Devonian and pre-Devonian formations that is unualed in all this region of peaks, cliffs, and broad canyon valleys. Opposite Mount Murchison on the north side of the Saskatchewan, ount Wilson presents another section of the pre-Devonian formaons, the upper end of which is a massive white quartzite formed the sands of the beaches over which the Devonian Sea deposited thick layer of calcareous sediments abounding in the remains of orals and various invertebrates of the time. On the west, Mount ilson rises directly above the North Fork of the Saskatchewan, hich here flows through a narrow picturesque inner canyon.

PALEONTOLOGICAL FIELD WORK IN THE UNITED STATES.

Dr. R. S. Bassler, curator of the division of paleontology in the ational Museum, was occupied during the field season in collecting eologic material and in mapping and studying the economic reources of the Franklin quadrangle in Williamson County, Tenn., cooperation with the Geological Survey of that State. This region of considerable economic interest on account of the phosphate nd oil shale possibilities. The numerous outcrops of Ordovician nd later Paleozoic formations contain a great number of fossils,

and Doctor Bassler was able to make a considerable collection of these needed for the Museum study series. He also secured several large exhibition specimens illustrating various geological phenomena, among these being a large mass of limestone composed entirely of the dismembered calices and columns of a large species of crinoid or sea lily in which the individual fragments are perfectly preserved and admirably illustrate the formation of a limestone through the accumulation of this type of animal remains.

An interesting stratigraphic observation was made on the efficacy of the coral reefs of the Ordovician in rock formation. A massive limestone bed about 15 feet thick, representing a middle Ordovician formation, here contains but a single coral reef, but within 10 miles the number of intercalated coral reefs has so increased that the formation attains a thickness of over 250 feet.

In April Mr. C. W. Gilmore, associate curator of vertebrate paleontology, was authorized to undertake a trip into New Mexico "for the purpose of making collections of geological material for the National Museum and determining the advisability of preserving certain lands in northern New Mexico for national monumental purposes." Mr. Gilmore was obliged to report that—

> Since the many square miles of "bad lands" surrounding the reserved area are equally fossiliferous and in places present much more favorable territory for the recovery of fossil remains than any observed within the boundaries of the monument, and also since the greater part of these surrounding areas lie within Pueblo grants, over which Federal control has been relinquished, there would be no advantage in retaining governmental control of so small a part of the area as is represented in the proposed monument.

Mr. Gilmore did, however, find a contiguous fossiliferous area in the Santa Clara Pueblo grant and secured for the Museum a well-preserved skull and other bones of a small rhinoceros, and, in an adjoining Pojoaque Pueblo area, remains of an extinct camel. The most promising area for collecting would appear to lie within land grants over which the Government has at present no control.

In January, this same year, Mr. J. W. Gidley, assistant curator of this division, was authorized, in cooperation with the United States Geological Survey, to conduct field explorations in the San Pedro and Sulphur Springs Valleys of southern Arizona, and on the completion of this work to visit the La Brea asphalt deposits of southern California, and from there go to Agate, in Nebraska, for the purpose of securing other exhibition material. The work in Arizona was eminently successful, Mr. Gidley shipping some 24 boxes having an aggregate weight of 5,000 pounds. The bulk of this collection, he reports, represents "a practically new Pliocene fauna containing about 60 vertebrate species, most of which are mammalian."

BOTANICAL EXPEDITION TO THE ORIENT.

As noted in last year's report, Dr. A. S. Hitchcock, custodian of the section of grasses of the National Museum, visited the Orient under the auspices of the Department of Agriculture for the purpose of collecting and studying grasses, especially the bamboos. As the specimens collected come to the National Museum, it will not be out of place to here mention briefly Doctor Hitchcock's work. The trip occupied about eight months, ending in December, 1921, and the regions visited included the Philippines, Japan, China, and Indo-China.

Japan is not very favorable for the collecting of grasses, as it is mostly a forested region and there is comparatively little open country. The bamboos were of interest, as there are many species. In the Lake Hakone region the hills were covered for miles with a single species of bamboo (*Arundinaria chino*), 4 to 8 feet high, often to the exclusion of everything else.

China, on the other hand, was very rich in grasses. One of the surprises of the trip was to find so much open grass land in a country that is said to be very thickly populated. The cities of China are very much crowded and the valley lands are intensively cultivated, but the hills are unoccupied and almost unused. This is in striking contrast to our own western regions where, except in national forests and other protected areas, the grass lands are extensively grazed. The basic reason for this condition in China appears to be the risk from bandits. The valley lands can be protected but the hills are open to the attack of robbers.

The expendition was very successful, and a large and valuable collection of grasses was brought back. The technical results of the work will be published later by the Department of Agriculture or the National Herbarium of the National Museum.

AUSTRALIAN EXPEDITION.

Through the generosity of Dr. W. L. Abbott, Mr. Charles M. Hoy continued his work of collecting for the Museum specimens of the very interesting fauna of Australia. The work was terminated during the winter and Mr. Hoy returned to the United States in May, 1922. The results of this expedition are of especial value for two reasons: First, the Australian fauna has heretofore been but scantily represented in the Museum, and, second, the remarkable fauna of that continent is rapidly being exterminated through various causes. The specimens received during the year bring the total up to 1,179 mammals, including series of skeletal and embryological material; 928 birds, with 41 additional examples in alcohol; and smaller collections of reptiles, amphibians, insects, marine specimens, etc.

For assistance and courtesies extended to Mr. Hoy while in Australia the Smithsonian Institution wishes to make grateful acknowledgment to the authorities of the Australian Museum, Sydney; the Queensland Museum, Brisbane; the South Australian Museum, Adelaide; the West Australian Museum and Art Gallery, Perth; and the Tasmanian Museum and Art Gallery, Hobart; also and particularly to Dr. Charles Hedley and Dr. Charles Anderson, of Sydney: Harry Burrell, Esq., of Kensington, New South Wales; and Capt. S. W. White of Fulham, South Australia.

BIOLOGICAL EXPLORATION IN THE DOMINICAN REPUBLIC.

Dr. W. L. Abbott, whose generosity in years past has enabled the Institution to take advantage of many opportunities in biological and other explorations, himself visited during the year the Dominican Republic, working in both the Samana Peninsula and the region lying between Sanchez (at the head of Samana Bay) and Puerto Plata, on the north coast. Having visited this region before, he was able to select new and interesting localities for collecting.

Doctor Abbott's work included botanical, zoological, and ethnological collecting, and the specimens sent in to the National Museum will go far toward completing the various series representing this region. Some 4,000 plants were collected, of which about 20 per cent were ferns. The ethnological material, including aboriginal Indian pottery and idols, is of great interest and has been described and figured in the annual pamphlet on the explorations and field work of the Institution.

ENTOMOLOGICAL EXPEDITION TO ALASKA.

Dr. J. M. Aldrich, associate curator of insects in the National Museum, spent several weeks during the field season collecting insects in Alaska. The Government railroad from the southern coast to Fairbanks, now nearing completion, offered an opportunity for travel not heretofore existing, and it was felt that it was important to know more about the insect fauna of this great region in view of the fact that the population will undoubtedly increase with the completion of the railroad. Regarding his work, Doctor Aldrich says:

> The expedition resulted in the accession of about 10,000 specimens of Alaska insects, nearly all from the interior region. As far as they have been studied up to the present time they indicate three somewhat distinct faunal regions in the territory covered.
>
> First, the maritime fauna consisting of the insects living upon the seashore and depending upon the ocean for necessary conditions of existence. Insects of this group extend down the coast, in many cases as far as the

te of Washington and some even so far as San Francisco, while it is sumed that they would also be found more or less in the Asiatic side of ·ing Sea.

'he second element is that of the humid mountain region along the coast; ·onsiderable part of this fauna extends to Puget Sound, Mount Rainier, l in less degree to other mountains of the Pacific Northwest. The relation this element to the Asiatic fauna is very little known.

The third element of the Alaska fauna, as far as observed, is that of the r interior and especially of the Yukon Valley, which has many elements common with northern Minnesota, Wisconsin, and Michigan, Ontario, the ·irondack Mountains of New York, and the White Mountains of New ·mpshire. Many of the insects of this group also occur in the Rocky ·untains of Colorado and no doubt further exploration will show that they ·ur in other mountains of the western United States. Those which repre- nt a more northern range also reappear in Labrador collections and pre- mably extend across North America, although we have no collections from termediate points. This element contains many species known from Fin- nd and the Scandinavian Peninsula in Europe, presumably extending, in eir distribution across Russia and Siberia.

In most orders of insects Alaska has a comparatively large fauna. There e very numerous species of the two-winged flies, or Diptera; and from ·ctor Aldrich's long experience with this group he naturally paid special atten- ·n to collecting in this order.

Bumblebees and wasps are conspicuous insects everywhere on flowers; and the absence of darkness bumblebees were observed to work as late as 10:30 night in Fairbanks. Grasshoppers were strikingly scarce, only two species ·ing found and in all but half a dozen specimens. Mosquitoes in the interior ·e exceedingly abundant, as is well known. Especial attention was given to ·em in collecting, and two species previously undescribed were among the aterial brought back. It appears, however, that the most troublesome species ·e the same ones which occur in somewhat less numbers in the Pacific North- est in occasional favorable localities. Horseflies are very numerous in the gion at Fairbanks, where they are commonly called mooseflies, since the moose more common than the horse.

The exploration of Alaska, especially the interior, from an entomological ·int of view, is important in itself and also forms a link in the study of a uch broader problem—that of the entire Holarctic fauna which extends almost ·ntinuously around the globe in the vicinity of the Arctic Circle. It is a ·atter of great scientific interest to determine how much of this northern ·una is the same in the New World as in the Old, and also to determine how uch of the fauna farther south, as, for instance, in the United States, has been ·rived from this northern region. It is hoped that opportunity will arise to ·rry this exploration much farther, not only in Alaska, where as yet only a ·ginning has been made, but also in other northern regions, as, for instance, abrador, Greenland, and Siberia.

THE INSTITUTE FOR RESEARCH IN TROPICAL AMERICA.

The recently organized Institute for Research in Tropical America, ·f which the Smithsonian Institution is a member, is hoping to ·stablish a research station in Panama. Such a station when prop- ·rly equipped will serve as a center for the prosecution of research ·pon problems in tropical biology and agriculture, and as a center from which biological explorations can be made.

FLORA OF THE PHILIPPINE ISLANDS.

At the request of Gen. Leonard Wood, Governor General of th Philippine Islands, a plan for the preparation of a flora of th Philippine Islands was drawn up by the Institution, together wit an estimate of the cost. This work, which it is proposed will b accomplished through cooperation of the Smithsonian Institutio with the Philippine Government, will be of the greatest importan to the agricultural interests, and, since the prosperity of the Phi ippines is primarily dependent on agriculture, to the islands ther selves. In addition to these material benefits, such a flora would b of great value to science, and a large number of specimens of ra and valuable plants from the Philippines would come to the Nation Herbarium as a result of its preparation.

At the close of the fiscal year funds had not been appropriate for beginning the work.

BAIRD MEMORIAL COMMITTEE.

To celebrate the centenary of the birth of Spencer Fullerto Baird, second secretary of the Smithsonian Institution, Februar 3, 1923, there was formed early in 1922 the Baird Memorial Com mittee. It was decided at a preliminary meeting that a publ meeting should be held in Washington on February 3, 1923, at whic addresses will be delivered and announcements made of the form o memorial or memorials that have been decided upon, and tha wreaths should be placed on the grave of Baird in Oak Hill Cem tery, the bust of Baird in the American Museum of Natural Histor in New York City, the Baird memorial bowlder of the America Fisheries Society at Woods Hole, and the Baird memorial tabl at the Bureau of Fisheries in Washington.

The form which the memorial to Professor Baird should take wa not definitely decided, several plans having been considered. Amon these were a bust or tablet to be erected in the Smithsonian ground the establishment of a Baird memorial medal to be awarded fo specially meritorious work in science, the publication of a memori volume of orginal scientific papers by Baird's associates or follower and a fisheries exhibit, preferably a museum.

DEVELOPMENT OF MULTIPLE-CHARGE ROCKET.

The development of a model multiple-charge rocket, mentione in previous reports, for the purpose of demonstrating the principl is being continued by Prof. Robert H. Goddard, of Clark University under a grant from the Hodgkins fund.

The specific work of the past year has been the development an test of certain new features which will increase considerably th

ffectiveness of the apparatus. A discussion of these, in detail, is eferred for a later report. Additional financial support has been ranted for the work by Clark University.

PUBLICATIONS.

A total of 164 volumes and pamphlets were issued during the ear by the Institution and its branches. Of these publications, here were distributed a total of 165,196 copies, including 251 olumes and separates of the Smithsonian Contributions to Knowldge, 20,777 volumes and separates of the Smithsonian Miscelaneous Collections, 27,263 volumes and separates of the Smithonian annual reports, 97,806 volumes and separates of the publicaions of the National Museum, 14,215 publications of the Bureau f American Ethnology, 3,159 special publications, 706 volumes of he Annals of the Astrophysical Observatory, 64 reports on the Iarriman Alaska expedition, and 812 reports of the American Hisorical Association.

The Institution carries out one of its chief functions, the "diffusion of knowledge," by means of its various series of publications. hey embrace the results of investigations and systematic studies n nearly every branch of natural science, and are distributed, in ost cases free of charge, to important libraries, educational intitutions, and scientific establishments throughout the world. In rder to assist in creating a greater popular interest in scientific atters, the annual report of the Institution has always contained general appendix consisting of a large selection of authentic, emipopular articles reviewing recent advances in every branch of cientific activity. There is a widespread and growing demand or this publication, showing an increased appreciation of the value f science and scientific investigations.

Besides the annual report, the Institution issues two series of ublications, the Contributions to Knowledge and the Miscellaneous ollections. The publications of the National Museum and the ureau of American Ethnology are mentioned in the reports of hose branches appended hereto.

Of the series of Smithsonian Miscellaneous Collections, 9 papers ere issued during the year, among them one paper by your secetary in the series on Cambrian Geology and Paleontology, and he usual annual pamphlet describing and illustrating the various cientific expeditions sent out or cooperated in by the Smithsonian nstitution.

Allotments for printing.—The congressional allotments for the printing of the Smithsonian reports and the various publications of the branches of the Institution were practically used up at the

close of the year. The allotments for the coming year ending J 30, 1923, are as follows:

For printing and binding the Annual Reports of the Board of Regents, with general appendixes, the editions of which shall not exceed 10,000 copies	$1(
Under the Smithsonian Institution: For the annual reports of the National Museum, with general appendixes, and for printing labels and blanks, and for the bulletins and proceedings of the National Museum, the editions of which shall not exceed 4,000 copies, and binding, in half morocco or material not more expensive, scientific books and pamphlets presented to or acquired by the National Museum Library	3
For the annual reports and bulletins of the Bureau of American Ethnology, and for miscellaneous printing and binding for the bureau	2
For the annual report of the National Gallery of Art and for printing catalogues, labels, and blanks	
For miscellaneous printing and binding:	
The International Exchanges	
The International Catalogue of Scientific Literature	
The National Zoological Park	
The Astrophysical Observatory	
For the annual report of the American Historical Association	
	7

Provided, That the expenditure of this sum shall not be restr to a pro rata amount in any period of the fiscal year.

Committee on printing and publication.—The purpose of Smithsonian advisory committee on printing and publication make recommendations regarding the merit and suitability o manuscripts submitted for publication by the Smithsonian Ins tion or its branches and also to consider all other matters relati printing and binding under the Institution. During the past eight meetings were held and 100 manuscripts acted upon. membership of the committee is as follows: Dr. Leonhard Stejn head curator of biology, National Museum, chairman; Dr. Ge P. Merrill, head curator of geology, National Museum; Dr. J. W Fewkes, chief, Bureau of American Ethnology; Mr. N. Holl superintendent, National Zoological Park; and Mr. W. P. T editor of the Smithsonian Institution, secretary.

LIBRARY.

The facilities of the library have been taxed to the utmost. number of loans for the fiscal year amounted to 14,436, and as r more books and periodicals were consulted without being taken the buildings. Interlibrary loans to accredited libraries, w distance permits, are being continued, and in a number of insti arrangements have been made for the photostating of pages rare volumes not permitted to leave the library.

Each day typewritten lists of original articles appearing in scientific periodicals received for the Smithsonian deposit in the Library of Congress are prepared and circulated among the heads of scientific bureaus under the Institution. These daily bibliographical lists, begun last November at the request of Secretary Walcott, have been well received from the start. Requests have come in for copies from other Government bureaus and research organizations, which it has not been possible to comply with, owing to lack of necessary equipment for the preparation of additional copies. The library now possesses more than a million volumes, pamphlets, manuscripts, and charts, there being 888,128 publications deposited in the Library of Congress, 156,275 belonging to the National Museum, and 35,000 belonging to other branches of the Institution. The number of additions for the fiscal year was 15,796.

As noteworthy additions to the various branch libraries might be mentioned that of the Göttingische Gelehrte Anzeigen for 1758, 1760, 1808, 1813, and 1814 to the Smithsonian deposit, by gift of the Gesellschaft für Wissenschaften zu Göttingen; Serindia, by Sir Aurel Stein, to the office library, at present deposited in the Freer Building, the gift of the Secretary of State for India; and the second and third volumes of Beebe's Monograph of the Pheasants, added to the library of the National Zoological Park.

NATIONAL MUSEUM.

The year has been an unusually busy one for the Museum, but although of late years its activities have greatly increased and its scope widely extended, the appropriation for its maintenance has remained practically the same for the past 11 years. Much credit is due the members of the Museum's staff for the fine results recorded from year to year. Undoubtedly the most important event of the year was the receipt and installation of the Herbert Ward collection of African ethnologica and sculptures. This collection, one of the most important ethnological units in the world, was brought together by Herbert Ward, an Englishman, who was with Stanley on his famous exploring expedition through Africa. It consists of 2,700 ethnological specimens and 19 superb sculptures in bronze of African natives by Mr. Ward.

An actual beginning was made during the year toward establishing the Loeb collection of chemical types, noted in last year's report. Two specially constructed cabinets were received from the Chemists' Club of New York, and a portion of each of seven new chemical compounds discovered in the Department of Agriculture were deposited in the collection. It is planned to solicit all available new chemical material, with the view of eventually making of the Loeb collection a complete series for the use of investigators in chemistry.

The Museum acquired during the year a total of 359,677 specimens. These are described somewhat in detail in the report on the Museum, appended hereto, but it will be of interest to mention here a few of the more important accessions. In anthropology the most important addition was the Herbert Ward African collection mentioned above. A large collection of the brilliant ancient pottery from the ruins of Casas Grandes, Chihuahua, Mexico, was received through the Archeological Society of Washington, and a remarkable series of aboriginal pottery collected by Dr. J. Walter Fewkes in the neighboring Mimbres Valley, N. Mex., was also placed on exhibition. A number of pianos were added by Mr. Hugo Worch to his notable collection, among them a magnificent gilt harpsichord made by Pleyel, Paris.

In the department of biology the outstanding feature of the year's accessions is the collection of about 100,000 insects collected by Dr. William Mann in South America, especially eastern Bolivia. Another important collection of insects was that made by Dr. J. M. Aldrich in Alaska, which numbered around 10,000 specimens. A considerable consignment of biological material, mostly vertebrates, was received from Mr. Hoy, who has been working in Australia under the auspices of Dr. W. L. Abbott. This material brings the important Australian expedition to a most successful termination.

In geology a number of valuable additions were made to the collections, among them specimens of Bolivian tin and tungsten ores from Mr. F. L. Hess; rich examples of carnotite and hewittite presented by the Standard Chemical Co., Naturita, Colo.; eight gold nuggets donated by Mr. Frank Springer; a large mass of meteoric iron from Owen Valley, Calif., the gift of Mr. Lincoln Ellsworth, of New York; a number of beautiful and valuable gems purchased for the Isaac Lea collection through its endowment fund; and a considerable amount of paleontological material, both vertebrate and invertebrate.

The divisions of mineral and mechanical technology have devoted their time largely to a more perfect and permanent arrangement of the great amount of exhibition material already on hand, while the divisions of history, textiles, and graphic arts report many valuable and interesting additions to their collections.

In addition to the explorations and field work mentioned earlier in this report, the Museum sent out or cooperated in various other expeditions. Mr. Arthur de C. Sowerby continued his work in China under the auspices of Mr. Robert Sterling Clark, who generously contributed all the material collected to the Museum. A shipment of vertebrates and other biological material was received from this expedition during the year. Mr. Paul C. Standley,

rough the cooperation of various agencies, spent five months in otanical collecting in El Salvador and Guatemala, bringing back er 6,000 specimens. Another botanical expedition, consisting of r. F. W. Pennell and Mr. E. P. Killip, was in western Colombia t the close of the year under the auspices of various scientific or-anizations. The purpose of the exploration was to study the flora nd secure botanical specimens in this region, as one of a series lead-ng up to a complete study of the flora of northern South America.

The auditorium and adjacent rooms of the Museum were used by umerous societies and organizations for meetings, congresses, and ectures. The Museum published during the year 9 volumes and 78 eparate papers. These are described somewhat in detail in the 'Report on publications," Appendix 10 of this report. The number of visitors to the National History Building during the year was 441,604; to the Arts and Industries Building, 262,151; and to the Aircraft Building, 46,380.

NATIONAL GALLERY OF ART.

Although the number of art works accessioned by the National Gallery during the year falls short of the average of recent years, nevertheless progress in the gallery's activities has been satisfactory. The greatest handicap to its work continues to be lack of exhibition space. It is believed that the falling off in number of accessions noted above is in part due to this shortage of space, as owners of valuable art works very naturally desire to see them adequately housed and exhibited. The urgent need of a suitable gallery for the national collections, already valued in the millions, will be readily understood when it is considered that until the past year the accessions to the collections were estimated at hundreds of thousands annually. If accessions are turned elsewhere on account of the lack of space to exhibit them, it is evident that in a few years the loss will amount to more than the cost of a building.

Among the accessions received during the year was a portrait of President Grant, by Thomas Le Clear, presented by Mrs. U. S. Grant, jr.; an oil painting entitled "The Signing of the Treaty of Ghent," by Sir A. Forestier, presented to the Smithsonian Institution by the Sulgrave Institution; a painting entitled "Tohickon," by Daniel Garber, provided through the Henry Ward Ranger bequest; and a portrait of Edwin H. Harriman, an artist's proof etching, one of 21 from the copper. A number of interesting art works were loaned to the gallery during the year, among them being 71 portraits in pastel, in a series of 22 life-size groups of Union and Confederate veterans of the Civil War, painted from life by Walter Beck, of Brooklyn, N. Y., 50 years after the Battle of Appomattox,

loaned by the artist through Mr. Walter M. Grant, of New York City.

Preliminary steps had been taken at the end of the year toward the acceptance of a rich collection of British masterpieces brought together by the late John H. McFadden, of Philadelphia. The collection comprises 44 notable examples of the work of nineteen British artists, and the acceptance of this valuable loan is regarded with much favor.

A number of paintings were acquired from the income of the Henry Ward Ranger bequest and assigned to various art institutions throughout the country. The terms of this bequest stipulate that any of the art works so acquired may be claimed during a certain period after the artist's death by the National Gallery of Art, remaining thereafter the property of the National Gallery. The selection and distribution of these purchases is entrusted to the National Academy of Design.

The income from the Bruce Hughes bequest is to be used to establish and maintain a section of the library of the National Gallery for reference works of art, to be known as the Hughes alcove. During the year the first purchases were made from this fund. An illustrated catalogue of the art works of the gallery was prepared and submitted to the printer during the year, but on June 30, 1922. had not been published. A lecture on the National Gallery, illustrated by 75 slides mostly in color, was prepared, and is to be placed at the disposal of persons throughout the country who desire to present it.

The first annual meeting of the National Gallery of Art Commission was held on December 6, 1921. Reports of the committees were presented and many important matters relating to the gallery were discussed, among them the urgent need of a National Gallery Building and the problem of the acceptance of proffered works of art.

FREER GALLERY OF ART.

Work during the year on the collections of the Freer Gallery of Art included chiefly the classification and cataloguing of Chinese, Japanese, and Tibetan paintings, Chinese tapestries, and Chinese and Japanese pottery; the preliminary classification of Korean pottery and Chinese and Japanese stone sculptures and jades; and the cataloguing of American paintings, drawings, and prints.

Progress has been made also on completing certain portions of the interior of the building and on the installation of the collections. Miss Grace Dunham Guest was appointed assistant curator on January 1, 1922, and Mr. Carl W. Bishop associate curator, April 9, 1922. Miss Guest sailed for Europe on June 24, 1922, to represent the Freer Gallery at the double centennial meeting of the Société Asia-

que de Paris, and to study European collections of oriental art, pecially ceramics.

BUREAU OF AMERICAN ETHNOLOGY.

The material culture and ceremonials of the American Indian e being modified so rapidly through contact with the white race at it is imperative for the bureau to make every effort to record ll possible data bearing on the aboriginal Indian culture. The derability of preserving this material so that accurate knowledge f this interesting and vanishing race may be available for future enerations is evident. Another important line of endeavor is the xcavating and repairing of prehistoric Indian dwellings. These ncient ruins are the object of great popular as well as scientific nterest, and it is the aim of the chief of the bureau to continue his archeological phase of the work in so far as funds will permit.

A new line of investigation has opened up for the bureau during the year, namely, the study of the material culture, and especially the architecture of the houses, of the aborigines of Alaska. The early villages of the Alaskan Indians have in many cases been deserted in the exodus to the canning factories, and the totem poles and villages which are rapidly being destroyed by the elements should be preserved in the immediate future so that they will not be lost forever. During the spring of 1922, Dr. T. T. Waterman conducted for the bureau an extended reconnaissance of the situation, bringing back many interesting data and photographs. It is intended to continue the work next year with a larger appropriation.

The work in the field and in the office of the individual members of the staff is reviewed somewhat in detail in Appendix 4 of this report, so that it will be necessary here only to give an idea of the scope of the work. The chief continued his successful archeological field work on the Mesa Verde National Park, Colo., bringing to light a most interesting and instructive ruin which he has named "Pipe Shrine House" on account of the numerous tobacco pipes found on a shrine in the kiva of this ruin. He also excavated and repaired Far View Tower, a round structure 10 feet high, which was probably used for observations of the position of the sun on the horizon at sunrise and sunset, in order to determine the time for planting and other dates important for an agricultural people.

The chief also visited the three groups of towers in Utah which he has recommended for the Hovenweep National Monument, and determined the exact situation of these ruins as a preliminary to a presidential proclamation setting aside this area as a national monument.

Dr. John R. Swanton continued work on his dictionaries of the Hitchiti and Alabama languages. Mr. J. N. B. Hewitt devoted his time to a number of Chippewa and Ottawa texts, and in continuing the preparation of the second part of his work on Iroquoian Cosmology, the first part of which has already been published by the bureau. Mr. Francis La Flesche completed and turned in during the year the manuscript of the second volume of his publication on The Osage Tribe. Dr. Truman Michelson carried on field work among the Fox Indians of Iowa, paying special attention to the linguistic relations of this and neighboring tribes. Mr. J. P. Harrington completed his bulletin on the Kiowa language and conducted field work among the Indians of the Chumashan area of California, laying special emphasis on the place names, material culture, and language.

Under the head of special researches, the chief of the bureau describes the work of Miss Frances Densmore on Indian music. During the year she recorded songs among the Yuma, Cocopa, and Yaqui tribes, making a total of nine tribes among whom this work has been done. Mr. W. E. Myer investigated Indian sites in South Dakota and western Missouri known to have been occupied by the Omahas and Osages in early historic times after they had come in contact with the whites but before they had been changed thereby to any considerable extent.

Several other interesting special researches are reviewed in the appendix on the bureau, among them field work by Mr. D. I. Bushnell, Jr., on the Cahokia mounds in Illinois; by Mr. B. S. Guha, among the Utes and the Navaho at Towoac, Colo., and Shiprock, N. Mex.; and by Mr. John L. Baer on pictographic rocks in the Susquehanna River.

INTERNATIONAL EXCHANGES.

During the year the number of packages of scientific and governmental publications sent abroad and received from foreign countries totaled 592,600 pounds. Although these figures show a decrease from the previous year, on account of the fact that shipments to Germany were resumed during that year and most of the material accumulated during the war was sent out, nevertheless there is an increase of 41,490 packages over the number sent out in 1914, the last year before the World War, showing that there is a steady growth in the work of the International Exchange service.

Exchange relations were reopened during the year with Rumania and Yugoslavia, the agencies in these countries being, respectively, the Institutul Meteorological Central at Bukharest, and the Académie Royale Serbe des Sciences et des Arts, Belgrade.

elations were established also with the newly formed Governments f Esthonia, Far Eastern Republic, Latvia, Lithuania, and Ukrainia. onditions in Russia and Turkey are not yet sufficiently settled to arrant the exchange of publications previously carried on between ıe United States and these countries.

The number of boxes shipped abroad during the year was larger ıan ever before, due largely to the opening of exchange relations ith Yugoslovia and certain of the independent Russian States, ıe material for these countries having accumulated here for sev-ral years.

The regular schedule of shipments to foreign countries was re-umed during the year. To Great Britain and Germany, shipments re made weekly; to France and Italy, semimonthly; and to other ountries, monthly.

NATIONAL ZOOLOGICAL PARK.

The past year has been one of the most successful since the estab-ishment of the park. The number of visitors exceeded 2,000,000; he collection of animals is larger and more important than ever efore; a number of minor improvements have been completed and rogress made on certain larger projects; and the reservation itself ıas been maintained in excellent condition. That the popularity f the park as a source of recreation and instruction continues ınabated is shown by the fact that for the third consecutive year he attendance has exceeded 2,000,000, and its increasing value as ı supplement to school-room instruction in natural history is demon-trated by the 205 schools and classes visiting the park during the ear, with a total of 13,585 individuals.

The total number of animals on exhibition at the close of the year as 1,681, representing 482 species of mammals, birds, and reptiles. This is not only a larger number of individual animals than ever hown before, but also a larger number of different species. Among he 656 accessions received during the year, 217 were gifts. Among hese may be mentioned two important collections from South America, one made by Dr. William M. Mann on the Mulford Bio-logical Explorations of the Amazon Basin and presented by the H. K. Mulford Co. of Philadelphia, the other made by Mr. W. J. La Varre, jr., and presented by him. These two collections con-tain several species of South American monkeys and birds never before shown at the park. One hundred and fifty mammals, birds, and reptiles were born in the park during the year.

Under the heading of improvements the report of the superin-tendent mentions a large project of grading, leveling, and filling in the west central part of the park, which was practically completed

during the year. This work makes available for the exhibition of hoofed animals a large area of comparatively level ground. Also it will be possible to greatly improve the main automobile road through the park. Extensive repairs were completed on the antelope house and the older bear dens. Three large outdoor cages were built for certain birds, and many minor repairs were completed during the year. The most urgent need of the park is now a suitable restaurant building to accommodate the greatly increased crowds of visitors. The present small building is in bad condition and is entirely inadequate to meet the needs of the public. A suitable building could be erected, using lumber in the possession of the park and employing the regular park force, for about $20,000. Another urgent need is for a new bird house, the old building, erected many years ago as a temporary relief, being in a very bad state of repair. Moreover, there is not sufficient space for the very valuable and interesting collection of birds and there is far too little room for visitors in the public aisles.

ASTROPHYSICAL OBSERVATORY.

The outstanding feature of the year's work was the publication of Volume IV of the Annals of the Astrophysical Observatory, a quarto volume of 390 pages, which covers in detail the work of the years 1912 to 1920. New instruments and methods of observing are described and a mass of solar observations is presented and discussed. Many kinds of evidence are given to show the solar variability, and reference is made to applications of the results which have been made by several meteorologists.

The observing station erected on Mount Harqua Hala, Ariz., through the generosity of Mr. John A. Roebling, has been much improved, owing to the zeal of Mr. A. F. Moore, in charge of the station. Solar constant observations were made on upward of 70 per cent of the days of the year. Comparisons made during and after a visit by the director show no change in the scale of pyrheliometry, so that the results from this station are comparable with those at Montezuma, Chile. Earlier in the year the director visited the station at Montezuma, where he revised all the adjustments of apparatus and some of the methods employed there.

In June the director and Mr. L. B. Aldrich proceeded to the Smithsonian station on Mount Wilson, Calif., where a beginning was made toward installing new "solar constant" apparatus to replace that removed to the new Arizona station in 1920. By anticipation it may be said that later results were secured on the distribution of energy in the spectra of 11 of the brighter stars by bolometric work in connection with the hundred-inch telescope, and

lso that the solar-energy curve was traced bolometrically with both lass and rock-salt prisms. The solar cooking apparatus on Mount Vilson referred to in previous reports suffered the loss of the cover f the oil reservoir through a high wind, and snow having gotten n, much water had leaked into the oil reservoir. It proved im- ossible to remedy this condition soon enough to undertake the roposed new experiments before the expedition returned to Wash- ngton in September.

In order to get the opinions of competent critics as to the value f the Smithsonian solar radiation measurements, the director wrote o the American representatives of the International Astronomical Jnion as follows:

> It is the intention of the Smithsonian Institution to continue daily observations at Mount Harqua Hala and Montezuma certainly until July, 1923, at which time it is proposed to consider the state of the work and the results reached with a view to deciding whether it is worth while to continue daily observations of the variability of the sun indefinitely or whether the usefulness of that work is unequal to the trouble and expense involved.
>
> An expression of opinion on the part of those interested in the subject would be of great value to the Smithsonian Institution in making this decision.

At a meeting in Washington the American representatives unanimously indorsed the work of the observatory, and later at Rome the international representatives passed a resolution expressing the same opinion. In view of these impartial indorsements of the work, it is a pleasure to announce that Mr. John A. Roebling has made it possible to assure the continuation of the solar constant stations at Harqua Hala and Montezuma until July, 1925. By that time it will doubtless be evident from the data obtained whether they should be continued longer.

A movement is under way in Australia to establish a solar observing station there similar to the Smithsonian stations. The Meteorological Service of Argentina is also proposing to equip its station at La Quiaca for solar observations, and it is expected that during the next fiscal year two sets of solar constant apparatus will be prepared for the Australian and Argentine stations.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

In the statement last year regarding the International Catalogue of Scientific Literature reference was made to the very apparent need of cooperation between organizations publishing abstracts to scientific literature and the International Catalogue. This year in the annual report of the United States regional bureau suggestions are made for an even greater consolidation of bibliographical interests. Although the combination of interests suggested would make

a very large organization, there is nothing new or radical in the proposed move; it is simply an attempt to harmonize numerous plans and suggestions, all of which aim to supply aids to investigators and students in the at present difficult task of finding the published records of what has been done in the various fields of research.

The need of prompt and reliable aid is keenly apparent, and while in some subjects satisfactory aids are available in others they do not exist.

It now appears that the organization of the International Catalogue of Scientific Literature may be kept in working condition, although it is not yet possible to resume publication on account of financial conditions. Pending the resumption of publication it is felt that through the large number of regional agencies much constructive work may be done by using their influence and efforts in bringing about cooperation among similar organizations dealing with any of the subjects embraced within the scope of the International Catalogue.

NECROLOGY.

JOHN A. ELSTON.

John A. Elston, Representative in the Congress from California and Regent of the Smithsonian Institution since January 9, 1920, died in December, 1921. Although a member of the Board of Regents for such a brief period, Mr. Elston took a real and active interest in the affairs of the Institution.

JOSEPH B. LEAVY.

Joseph B. Leavy, philatelist in the National Museum since 1913, died July 25, 1921, after a lingering illness. Mr. Leavy was educated at Columbia University, and later entered into business, in which he continued for several years. He served in the Army during the Spanish War.

To him is due the credit for the excellent installation of the large collection of stamps in the Museum, which includes specimens of all new issues sent to the Post Office Department from various foreign Governments.

JAMES MOONEY.

James Mooney, ethnologist in the Bureau of American Ethnology, died on December 22, 1921. Mr. Mooney was born in Indiana in 1861, and became associated with the bureau in 1885, shortly after its organization by Major Powell. He remained a member of the staff from that time until his death.

Mr. Mooney was very widely read regarding the history of the aborigines north of Mexico, being equaled by few perhaps in this particular field. His information was most extensive, however, regarding the Indians of the southeastern woodlands and the Great Plains, and he was the leading authority on one tribe in each area, the Cherokee and the Kiowa. Several of Mr. Mooney's investigations published by the bureau are standard works in their special field.

He was one of the founders of the American Anthropological Association, a member and ex-president of the Anthropological Society of Washington, and a member of the Mississippi Valley Historical Association. Mr. Mooney's death brings to a premature close a notable scientific career.

THOMAS F. HANEY.

Thomas F. Haney, preparator in the National Museum for over 28 years, died October 8, 1921. During his service for the Museum, Mr. Haney constructed many difficult large-size models illustrating the occurrence, mining, and manufacture of various mineral resources. His skill and minutely detailed work in this field of educational exhibits will be greatly missed.

ANDREW L. FANT.

Andrew L. Fant, watchman, a faithful and efficient employee in the National Museum since 1893 and lieutenant of the watch force since 1903, died on October 6, 1921.

Respectfully submitted.

CHARLES D. WALCOTT, *Secretary.*

APPENDIX 1.

REPORT ON THE UNITED STATES NATIONAL MUSEUM.

SIR: I have the honor to submit the following report on the operations of the United States National Museum for the fiscal year ending June 30, 1922.

The year, a busy one, was marked by the multiplicity of activities and advancement is shown in a number of directions. As set forth in the last report, the Museum is receiving practically the same appropriation that it did 11 years ago, in spite of increased scope, additional collections, and advanced cost of all material and labor necessary to its maintenance. That the Museum attains the fine results recorded from year to year is owing, in large measure, to the personal qualities of the members of its staff, to whom much credit is due.

The organization and staff of the Museum have undergone no noteworthy changes; policy and plans have remained opportunistic in the absence of funds to enable them to be considered in advance.

Of prime importance this year was the receipt and installation of the Herbert Ward collection of sculptures of African natives and of African ethnological specimens. Like the bequest of James Smithson to the United States, this gift from a British subject to the American people is unique and deserves mention also as a wonderful representation of the native dignity of an aborginal race, typical of all aborigines. Its installation is noteworthy as marking an advance in the display of such objects.

A beginning was made under the terms of the will of Dr. Morris Loeb for the establishment of the Loeb collection of chemical types in the National Museum. This collection forms a separate entity in the department of arts and industries. An advisory committee cooperates in its management, consisting of Dr. C. L. Alsberg, chairman; Dr. Victor Lenher, Mr. James K. Senior, Dr. G. C. Spencer, representing the Bureau of Chemistry of the Department of Agriculture; and Mr. F. L. Lewton, representing the Museum and in charge of the collection.

The two specially constructed storage cabinets were received from the Chemists' Club of New York City, and a portion of the original material of each of seven new chemical compounds, discovered and prepared in the Department of Agriculture, were transferred to the

b collection. The members of the committee have offered to cit additional original chemical material for the series. Ar-gements were made with trade journals for advance notice of the lication of new chemical compounds, in order to facilitate prompt citation.

teps were taken to have greater use made of the facilities af-led Washington by the National Museum. Through arrange-its with the authorities of the public schools of the District of umbia the Museum, when notified in advance, furnishes expert dance by a member of its staff to scholars and teachers visiting halls. In some instances such visits have resulted in further rk along similar lines after the return to their school buildings l on several occasions have been followed by talks to the students heir classrooms by members of the staff of the Museum. Through peration with the Wild Flower Preservation Society of America, Audubon Society of the District of Columbia, and the American restry Association, the Museum arranged a series of six Saturday rning lectures in the auditorium of the Museum for honor pupils the seventh and eighth grades of the public schools, and the erican Forestry Association awarded blue ribbons for the best d houses submitted by the pupils.

The schools of Washington, in common with the higher educa-nal establishments of the country, have long shared the benefits the duplicate specimens distributed by the Museum for educa-nal purposes, and this year was no exception.

The value of the Museum to the commercial interests of the Na-nal Capital, as well as to its educational interests, was demon-ated by a series of lectures by the curator of textiles given to eral groups of employees handling textiles in one of the large partment stores of the city, who, at the solicitation of their firm, ne to the Museum during business hours for the purpose.

The influence of the Museum in education is being felt outside immediate vicinity, through the large delegations of students iting it annually, often as part of their courses of instruction, and o through its assistance in the preparation of textbooks. Photo-aphs and essential data of the exhibits pertaining to the mineral lustries were supplied to the Pennsylvania State Board of Edu-ion, and to other inquirers.

President Harding, on October 24, 1921, under authority of the gislative, executive, and judicial appropriation bill for the fiscal ar ending June 30, 1913, directed the Bureau of Efficiency to pre-ibe a uniform system of employee ratings for all departments, d requested the heads of the departments to put the system into ect. Ratings were first to be established for employees engaged

in clerical or routine work, such as clerks, stenographers, bookkeepers, messengers, and skilled laborers, and afterwards to be extended to employees engaged in professional, scientific, technical, administrative, or executive work, or any other work involving for the most part original or constructive effort. This was inaugurated by a survey of all the positions existing in the Museum on November 15, 1921, carefully prepared and submitted to the Bureau of Efficiency. An initial report on the efficiency of each employee was made dating May 15, 1922, and similar reports are to be made every six months hereafter. The installation of this system added considerably to the duties of the officials of the Museum.

The changing of the system of keeping Government accounts, to make the items of expenditure identical in all Government offices, whether large or small, likewise, temporarily at least, added to the work this year in the administrative office. Efforts were also made toward unifying other business methods of the Government offices generally, as to the handling of supplies, traffic matters, etc.

BUILDINGS AND EQUIPMENT.

The National Museum completely occupies two large and two small buildings, besides considerable space in two other structures. The combined floor space is approximately 670,000 square feet. To keep these buildings in repair requires all the available appropriation, so that radical changes in arrangements, however much needed, are almost impossible. This year by the removal of one partition and the erection of another, two small exhibition halls were added to the floor space for the display of specimens in the Arts and Industries Building, though the storage space was correspondingly diminished. Other repairs consisted, as usual, of repainting of walls and ceilings in places where most needed, the replacing of certain worn-out floors, and repairs to roofs, gutters, etc. The hot-water heating system was extended to the concrete building in the east court of the Natural History Building, replacing the temporary heating arrangements installed there when the structure was erected during the World War.

In the Natural History Building a thorough investigation was made of the dome and the great piers supporting it. The slight displacement of the stone arches which span the piers, the opening of joints at the end of the balustrades under these arches and in the fourth-story floor at the ends of the piers, have been brought about by a movement at the upper end of the piers, doubtless caused by the eccentric application of the weight of the dome. The piers are fully braced by a large number of steel beams to the walls of the building and, since the walls are successfully resisting the pressure from the piers, the movement of the latter, it is believed, will

obably not proceed much farther. Careful observations and asurements will, however, be made at intervals of a few months determine if any further displacement occurs.

By the acquisition of 37 exhibition cases and 116 pieces of storage, oratory, and office furniture, there were on hand at the close of e year 3,679 exhibition cases and 11,572 pieces of storage, laboraty, office, and other furniture, besides 83,500 drawers, trays, boxes, d wing frames.

COLLECTIONS.

The total number of specimens acquired by the Museum during ie year was approximately 359,676. Additional material to the tent of 995 lots, chiefly geological, was received for special examiation and report. Nearly 20,000 specimens were lent to specialts for study, mainly on behalf of the Museum, and about 33,000 ecimens were sent out in exchange, for which the Museum reeived valuable material. Over 10,000 duplicate specimens were sed as gifts to educational establishments. Of these nearly half ere contained in regular sets of labeled material previously prepared for shipment, and the remainder comprised specially selected ts to meet particular cases. The duplicates were chiefly fossil nvertebrates, minerals, and ores, material illustrating rock weathering and soil formation, miscellaneous geological material, mollusks, nd marine invertebrates, with smaller lots of specimens from the ollections of insects, mammals, fishes, birds, archeology, ethnology, extiles, physical anthropology, and wood technology.

Anthropology.—Collections in unusual number and of scientific alue were received by the department of anthropology. Especially orthy of praise is the Herbert Ward African collection, heretoore mentioned, given to the Museum by Mrs. Herbert Ward. his collection, forming one of the most important ethnological nits in the world, was begun by Herbert Ward in Africa during he first great period of exploitation by Livingstone and Stanley. t consists of 2,700 specimens of African ethnologica and is illustrated by 19 superb sculptures in bronze by Mr. Ward. The whole ollection is displayed to advantage in the halls of ethnology in he Natural History Building.

Through the friendly offices of the Archæological Society of Vashington, the division of American archeology received a large ollection of the brilliant ancient pottery from the ruins of Casas randes, Chihuahua, Mexico. The remarkable aboriginal ceramics ollected by Dr. J. Walter Fewkes in the neighboring region, the imbres Valley, N. Mex., were placed on public view. From the ational Geographic Society's expedition in Chaco Canyon, N.

Mex., conducted by Mr. Neil M. Judd, considerable material was forwarded.

An ornate gilt bronze statue of Buddha from the Imperial Palace at Peking, containing rolls of inscribed prayers, was received by the division of Old World archeology from Maj. Murray Warner through Mrs. Gertrude Bass Warner, of Eugene, Oreg.

Mr. Hugo Worch has added a number of pianos to his collection, and especially noteworthy is a magnificent gilt harpischord made by Pleyel, Paris, France. The collection of violins bequeathed to the Museum under the terms of the will of Dwight J. Partello was lost to the Museum, as it was found that through a previous bill of sale the collection belonged to one of his daughters.

In art textiles mention should be made of a collection of specimens of lace of high class, a permanent deposit by Miss Emily G. Storrow. In ceramics a selection of American art pottery was supplied for the exhibit of the National Gallery of Art.

A special exhibit of tiles made in the United States and assembled by the Associated Tile Manufacturers to illustrate the result of 44 years' development of an American industry was shown from May 16 to June 20, 1922, in two rooms off the foyer in the Natural History Building.

Biology.—From the numerical standpoint the collections of the department of biology show less uniform and healthy growth than during the fiscal year 1921. The actual number of specimens received, 318,950, represents, it is true, an increase over the previous year, but this increase is only 67,437, while the year 1921 showed an increase of no less than 114,720 over its predecessor.

Together with the decrease in relative increment has gone a general decrease in the scientific importance of the new accessions. Three curators regard this importance as increased over that of the previous year's accessions, but only one of these (insects) feels called upon to express enthusiasm. Of the six others five report essentially stationary conditions and one (fishes) a falling off.

The great outstanding feature among this year's accessions is the collection of about 100,000 insects of all orders, made by Dr. William M. Mann in South America, chiefly in eastern Bolivia. In Alaska another unusually important collection of insects was obtained by Dr. John M. Aldrich. The final consignment of Mr. Hoy's Australian material (mostly vertebrates) presented by Dr. William L. Abbott, brings the important and successful Australian expedition to a close.

The National Herbarium through cooperation with the Department of Agriculture acquired the very large private herbarium of Dr. Otto Buchtien of over 45,000 specimens, rich in material from

olivia, Chile, and Paraguay, the Bolivian flora being particularly ll represented.

Many other smaller collections were received, including mammals om Alberta and plants from British Columbia collected by Sec- tary and Mrs. Walcott.

The work of remedying defects in the biological exhibition has en practically confined to the mammal halls. Good progress has en made in routine curatorial and preparatorial work in the rious collections, but everywhere this work is suffering from the sufficiency of space and of personnel.

Geology.—A satisfactory increase in the geological collections is oted, although the accessions number slightly less than last year, 17, with an aggregate of 23,504 specimens being recorded.

Valuable additions were made to the collections of Bolivian tin nd tungsten ores by Mr. F. L. Hess; rich examples of carnotite and ewettite, the best thus far found in the United States, were acquired hrough the generosity of the Standard Chemical Co., Naturita, olo.; and large uranophane-bearing sandstone specimens were pre- ented by Mr. John J. Bonner, Lusk, Wyo. Gold nuggets, eight in umber, the largest weighing 4½ ounces, from the Maxwell Land rant, N. Mex., were donated by Dr. Frank Springer, and Hon. olm O. Bursum presented examples of torbernite, a radium-bearing ineral from White Signal, N. Mex. Other gifts to the economic ollections include examples of diamond-bearing rock from Pike ounty, Ark., and slabs of building stones supplied by various ealers.

The most notable addition to the meteorite collection is the mag- ificent mass of iron from Owens Valley, Calif., gift of Mr. Lincoln llsworth, New York City. Examples of other falls and finds, 10 n number, either new to the collection or hitherto poorly represented, ere acquired chiefly through exchanges.

The mineral collections were benefited through gifts which in- lude at least three exhibition specimens. Large fine crystals of lemanite, donated by Mr. W. S. Russell, Los Angeles, an attractive ecimen of cuprite showing deep red crystals on native copper, by r. R. O. Hall, San Jose, Calif., and a zoned rhodenite of unusual rm, by Col. Washington A. Roebling, Trenton, N. J., are notable nong these. Valuable foreign minerals were acquired through change; type materials were transferred by the United States eological Survey; a series showing the effect of radium rays on e color of minerals. beryl crystals from Brazil, and examples of squehonite, demantoid garnet, and other forms from Italy were quired by purchase; and interesting collections were made in the ld by the assistant curator. Gems of beauty and value have en added to the Isaac Lea collection through its endowment fund,

including a series of uncut diamonds from the mines of the Arkansas Diamond Corporation, Murfreesboro, Ark.; a unique cut gem of orthoclase from Madagascar; a blue zircon from Australia; and a series of fresh-water pearls from the rivers of the Mississippi Valley. A number of individual gifts are also recorded.

Paleontological material was received from Mexico, Central and South America, India, and several European localities, these being chiefly Mesozoic and Cenozoic, while numerous collections from Paleozoic rocks of the United States and Canada were made by the curator or presented by interested friends. Unusually well preserved cetacean remains obtained in the Miocene deposits along Chesapeake Bay; valuable reptilian material acquired by exchanges: skulls and bones of extinct buffaloes, presented by the John A. Savage Co., Crosby, Minn.; and remains of the Beresovka mammoth, are among the notable accessions of vertebrate material.

Mineral and mechanical technology.—In the division of mineral technology attention was confined entirely to a more permanent and complete arrangement of the exhibits already on hand, and new material consisted chiefly of photographic transparencies which were installed in the respective exhibits to which they referred. Apart from this work, the division was chiefly engaged in cooperative educational work with the Pennsylvania State Board of Education through Mr. Samuel S. Wyer, of Columbus, Ohio. The plans of the State Educational Board call for revision of the seventh-grade geography course to include the study of the State's mineral resources. The extent of the division's cooperation may be judged from the fact that it has supplied a considerable amount of the data for text and illustrations from the models of the many mineral industries exhibited in the Museum.

The division of mechanical technology was extremely busy, primarily, in regrouping its collections and rearranging objects in the collections so as to tell a story rather than merely represent a period in development, in an endeavor to impress the student with the significance of the material rather than its mere existence; and, secondarily, through the receipt of over 100 per cent more objects than were received the preceding year. In the line of special investigations, those inaugurated last year, particularly with regard to the developments in aeronautical engineering, were continued.

Textiles, wood technology, foods, and medicine.—The collections under the supervision of the curator of textiles, which, besides textiles, embrace wood technology, food, medicine, and miscellaneous organic products, were increased by many gifts and by transfer and loan of property from other Government bureaus amounting to nearly 3,000 objects. The most important of these are as follows:

From the Department of Commerce, several hundred specimens of industrial raw materials not heretofore represented in the collections, which had been sent to the department by American consular offices and trade commissioners for the purpose of encouraging foreign commerce. There were added by gift beautiful specimens of silks, fur fabrics, and drapery textiles contributed by American manufacturers to show the progress of textile industries in this country.

To the collections arranged to show the importance of wood and the industries based upon the use of that raw material, there were added two series of specimens illustrating the manufacture and use of sulphite wood pulp for writing papers, one showing in detail the steps in the process, and the other the exact quantities of each ingredient entering into 100 pounds of finished paper; also exhibits showing the importance and uses of American walnut, many examples of articles turned from wood, and specimens of laminated wood wheels for motor vehicles.

The collections in the division of medicine were enlarged by extensive series of specimens showing the manufacture of surgical dressings, pills, plasters, surgical ligatures, and clinical thermometers; specimens of essential oils and related aromatic substances; important alkaloids and alkaloidal salts used in medicine; and a series of charts showing the treatment of rabies, typhoid fever, and whooping cough.

Graphic arts.—The specimens acquired in the division, while less than half in number, are still fully as important, artistically and technically, as the 1920–21 specimens. The most important individual gift was that of the sixteenth century methods of making type, in which all the specimens were made by or prepared by Mr. Dard Hunter, Chillicothe, Ohio. Mr. Hunter himself made the punches, struck the matrices, and cast the type. This is one of a series consisting of printer's ink, paper, and type making, which, with the promised modern methods of type making, will be about complete. Several gifts combined have greatly improved both the technical and historical series of collotype. The Campbell Art Co., of Elizabeth, N. J., gave a valuable and instructive technical exhibit of color printing, and beautiful examples of the process were also furnished by Foster Bros., of Boston, the Medici Society of America (Inc.), and by Rudolf Lesch, of New York City. These are examples of the finest collotype work being produced to-day, and make an excellent showing of this process of photomechanical reproduction. A new process for reprinting books has been developed by the Polygraphic Co., of Berne, Switzerland, who donated a complete exhibit. In this so-called Manul process the negative is ob-

tained upon a sheet of very thin paper without the use of a camera or lens.

The series of pictorial photographs collected this year, over 100 in number, is a very important collection of artistic photography representing 17 of the foremost pictorial photographers of the world. The successful collection of this material was largely due to efforts and suggestions of Mr. Floyd Vail, of the New York Camera Club. The gift by Maj. Murray Warner through Mrs. Gertrude Bass Warner of 42 autochromes, the work of Major Warner, deserves mention, as they preserve the wonderful color schemes of the Panama-Pacific Exposition, as well as being fine specimens. A loan from Mr. Earle W. Huckel, of Philadelphia, of several printed books contains one dated 1497, Theology, by Lockmayer, which is the earliest book in the division; also a beautiful book from the famous Moretus Press dated 1696. The most beautiful example of presswork and typography shown is a copy of The Well at the World's End, printed by William Morris at the Kelmscott Press in 1896.

Many small and individual objects have augmented various series, adding to their extent and beauty, as, for example, two beautiful water colors by Mr. W. H. Holmes, Director of the National Gallery of Art, and a black and white original, loaned by Franklin Booth.

One hundred photographs of snow crystals, by Mr. W. A. Bentley, form a valuable addition to the technical collections. A notable loan exhibit of artistic photography, the work of Mr. Floyd Vail, was shown for two months and attracted much attention.

History.—During the past fiscal year, the historical collections have received a number of additions of more than usual interest and importance. These include the following: The American flag, which, after receiving military honors in the Sorbonne in the presence of President Poincaré, was flown with a French flag at the summit of the Eiffel Tower and saluted with 101 guns, April 22, 1917, in celebration of the entry of the United States into the World War on the side of the Allies. This flag was presented by the French ambassador, M. Jusserand, to President Harding at the White House on Decoration Day, May 30, 1922, and deposited in the Museum by the President. A series of very handsome silk American flags, presented to Gen. John J. Pershing in recognition of his services as commander-in-chief of the American Expeditionary Forces in France during the World War and loaned to the Museum by him. Two sectional relief maps of northern France, one made of papier-mâché and one of plaster, presented by Marshal Haig and Marshal Petain, respectively, to the Hon. Medill

McCormick, and by him presented to the Museum. The first of these consists of eight sections, 22 by 27 inches in size, showing when united the territory bordering the British battle front from Dunkirk to Amiens. The second consists of 111 sections, each 19 by 25 inches, and shows the region of the French front from Vermand to Courgenay, in great detail. Another relief map of much importance is one received from the United States Marine Corps, showing the region about Belleau Wood. The numismatic collections relative to the World War have been increased by a number of examples of the medals and decorations issued in the United States and European countries during the war.

The original historical collections have been increased by a sword carried during the War of the Revolution by General Washington, a cane bequeathed to him by Benjamin Franklin, and a sword owned by Gen. Andrew Jackson. These three objects were transferred to the Museum from the Department of State by joint resolution of Congress approved February 28, 1922. From the same department by transfer was received the small writing desk used by Thomas Jefferson when he drafted the Declaration of Independence in Philadelphia in 1776, which bears a memorandum in his own hand attesting to its history. A single addition was made during the year to the collection of costumes worn by the mistresses of the White House. This was the dress worn by Mrs. Andrew Jackson, jr., on the occasion of a reception given at the White House in her honor in 1831, and lent to the Museum by Mrs. Rachel Jackson Lawrence, of the Hermitage Association.

Work on the collections.—The care and preservation of the collections require a large proportion of the energies and time of the scientific staff and present many difficulties to be surmounted. In ethnology, the installation of the Herbert Ward collection led to a recasting of the African collection generally. The conditions hampering the development of the biological exhibition since the later years of the World War have continued, making it impossible to do more than remedy special defects as opportunity presented. A general overhauling of the unmounted larger cetacean material has placed this series in a condition to be used for the first time in many years. Commendable progress is reported in the care of the geological collections, though comparatively few new exhibits were installed.

The assignment of the entire east gallery of the Arts and Industries Building for the use of the division of medicine necessiated a complete rearrangement of all the cases and the installation of a number of new exhibits. In the division of mechanical technology a complete inventory was made of the collections, the Museum catalogues as far back as 1876 being carefully examined and checked

with the specimens. The collections of graphic arts on display in the Smithsonian Building were rearranged so that exhibits of a kind, both historical and technical, are located near together for easy examination.

The classification of the collections by members of the staff has produced the usual amount of research work on the material intrusted to their care; and the usual generous cooperation of outsiders has been of the utmost assistance in enhancing the scientific value of the collections. The total number of papers by members of the staff, or based partly or wholly on National Museum material by outsiders, published during the year is 332.

EXPLORATIONS AND FIELD WORK.

From the standpoint of exploration and expeditions, the year just completed shows very little improvement over 1920–21. The work carried on by various other governmental agencies, particularly by the United States Geological Survey, the Bureau of Fisheries, the Biological Survey of the Department of Agriculture, and the Bureau of American Ethnology has, as usual, resulted in important material for the national collections.

The number of expeditions contributing material to the department of biology, according to the reports of curators, was 18, of which no less than 10 were both financed and directed by outside friends and correspondents, 7 were financed by others and partly or wholly directed by members of the staff of the Museum, while only 1 was entirely controlled by the Museum. In the department of geology, extensive field work was confined entirely to the division of paleontology.

Besides the field work described here, a number of other expeditions in which the Museum was interested are mentioned in the first part of this report under the heading "Explorations and researches."

The work of Mr. Arthur de C. Sowerby in China, interrupted by the World War, was resumed, a shipment of specimens from the Province of Fukien being received. The expenses of this work are met by Mr. Robert Sterling Clark, who generously contributes all the material to the Museum. Special effort is being directed to securing vertebrates from southern and other parts of China not hitherto represented in the national collections.

Dr. William M. Mann, while attached to the Mulford Biological Exploration of the Amazon Basin, collected a large number of insects and some miscellaneous material of other kinds. This expedition was organized by the H. K. Mulford Co., of Philadelphia, under the direction of Dr. H. H. Rusby, chiefly for the purpose of studying drug plants, but also for making general biological collections. By invitation, Doctor Mann was attached as entomologist and assistant

irector and during the last 3 of the 10 months of the expedition as in charge, on account of the illness of Doctor Rusby.

Dr. Paul Bartsch continued his experiments in heredity on land nollusks of the genus Cerion, under the joint auspices of the Smithonian Institution and the Carnegie Institution of Washington. He as been working upon a survey of the distribution of the native pecies in the Florida Keys. By the use of a seaplane, detailed for he purpose by the Navy Department, Doctor Bartsch was able in our days to fly at low altitude over the entire region and note on harts all the visible grass plots—the habitat of the Cerions. It will ow be possible by means of the charts to examine the native colonies vithout loss of time in locating them. Mr. John B. Henderson, Regent of the Smithsonian Institution, made a rather hurried trip o Jamaica to personally collect living specimens of the Helicid enus Thysanophora for anatomical study toward a proposed monoraph of the group. This little expedition proved unusually successful and of great benefit to the work in hand, as well as to the mollusk collections.

Mr. Paul C. Standley carried on botanical exploration in Central America, through cooperation with the Gray Herbarium, the New York Botanical Garden, the Bureau of Plant Industry of the Department of Agriculture, and Mr. Oakes Ames, the latter being interested in the orchids of this region. About five months were spent in El Salvador, and nearly a month in Guatemala. The collections, over 3,000 botanical specimens, will be divided among the contributing institutions.

Another botanical expedition was in the field at the close of the year. Dr. F. W. Pennell, of the Philadelphia Academy of Natural Sciences, accompanied by Mrs. Pennell, and Mr. E. P. Killip, of the Museum, is conducting a six months' exploration of western Colombia, on behalf of the Gray Herbarium, the New York Botanical Garden, the Philadelphia Academy of Natural Sciences, and the Museum. Mr. Oakes Ames is contributing also to the expense of the expedition. This is one of a series toward a complete study of the flora of northern South America.

The biological expedition alluded to as the only one under the exclusive control of the Museum was a trip to the interior of Alaska undertaken by Dr. John M. Aldrich, associate curator of insects. The Alaska Engineering Commission of the Department of the Interior furnished Doctor Aldrich with horses and their subsistence and with transportation on the Alaskan Railroad. About 10,000 specimens were collected, consisting mainly of Diptera and Hymenoptera, with a fair number of Hemiptera.

The expedition of the Museum of the American Indian (Heye Foundation) to New Mexico under Mr. F. W. Hodge furnished

valuable skeletal material, as has been the case for several years past. The exploration of Pueblo Bonito in the Chaco Canyon, N. Mex., by the National Geographic Society under the direction of Mr. Neil M. Judd during the summer of 1921 was largely preliminary. The exploration will be continued through a number of seasons and the collections are to become the property of the National Museum.

Early in the year Mr. F. W. Foshag collected minerals from interesting cave deposits in the Grand Canyon, near Supai, Ariz., a project made possible through the courtesy of Mr. C. A. Heberlein, operating in the region. Mr. Foshag also made field trips to southern California and Nevada in connection with research work at the University of California, the results of which were likewise added to the national collections.

Doctor Bassler spent his vacation in July, 1921, in geological fieldwork in the central basin of Tennessee, under the auspices of the Geological Survey of that State. The field offered such opportunities that arrangements were made for another summer's work in the same general area. During the greater part of June, 1922, therefore Doctor Bassler, in company with Dr. E. O. Ulrich and Mr. R. D. Messler, of the United States Geological Survey, was occupied in making stratigraphic sections and collecting fossils over the entire central basin, an area of about 8,000 square miles. The ultimate object of this work is the preparation of a monograph on the stratigraphy and paleontology of Tennessee. On the completion of his work in Tennessee, in 1921, Doctor Bassler proceeded to Springfield, Ill., where casts of type specimens in the State museum collections were made, in accordance with the department's plan to complete so far as possible the representation of type specimens in the national collections. Through the courtesy of Mr. E. J. Armstrong, of Erie, Pa., Doctor Bassler visited all the classical Silurian and Devonian localities in northwestern Pennsylvania and western New York during the latter part of September to obtain field knowledge of the detailed geology and to collect carefully selected sets of fossils illustrating the numerous formations of the region. The work was highly successful, and the large collections of Devonian fossils in the Museum concerning which exact stratigraphic data have been lacking can now be determined and arranged in necessary detail.

Dr. E. O. Ulrich, of the United States Geological Survey, spent the summer of 1921 in continuation of his field researches on the early Paleozoic rocks of eastern North America, and previous to joining Doctor Bassler in Tennessee, as noted above, studied the Silurian stratigraphy of Pennsylvania and Maryland. Mr. N. H. Boss made several short trips collecting in the Miocene deposits

ong the Chesapeake Bay, all of which were under the auspices of e National Museum. These trips were unusually productive in e recovery of well-preserved cetacean remains.

Dr. George P. Merrill did a little work on his own initiative while Maine on a vacation, and Mr. Shannon on a two-day trip to ort Deposit and Conowingo, Md., and Peach Bottom, Pa., visited number of commercial granite, feldspar, talc, and slate mines and iarries.

MEETINGS, CONGRESSES, AND RECEPTIONS.

The Museum is seldom able to arrange regular lecture courses, but does diffuse much knowledge through the lectures and proceedings f the various governmental, scientific, and educational agencies sing its meeting facilities. The auditorium and adjacent council ooms afforded accommodations during the year for about 150 meet-ngs, covering a wide range of subjects.

The governmental agencies availing themselves of these opportuni-ies included the State Department, the War Department, the Treas-ury Department, the Department of Labor, the Interdepartmental Social Hygiene Board, and the Federal Power Commission. The scientific and technical groups included he National Academy of Sciences, the National Research Council, he American Relief Administration, the International Association for Identification, the American Surgical Association, the American Federation of Arts, the Wild Flower Preservation Society of America, the National Association of Postmasters of the United States, the National Association of Office Managers, the Liberty Calendar Association of America, the George Washington Memorial Association, the Committee on the Baird Memorial, the Organizing Committee of the Nineteenth International Congress of Ameri-anists, the Anthropological Society of Washington, the Archæo-logical Society of Washington, the Audubon Society of the District of Columbia, the Biological Society of Washington, the Chemical Society of Washington, the Entomological Society of Washington, the Federal Photographic Society, the Organization of Appointment Clerks, the Philosophical Society of Washington, the Shakespeare Society of Washington, and the Washington Academy of Sciences. The educational and miscellaneous agencies included the American University; the School of Foreign Service and the School of Medi-cine of the Georgetown University; the Federation of Citizens Asso-ciations; the General Federation of Women's Clubs; the Potomac Garden Club; the George Washington Post No. 1, American Legion; the Matrons and Patrons Association of 1922, Order Eastern Star; the Smithsonian branch of the Federal Employees Union No. 2; the

Smithsonian Auxiliary of the District of Columbia Chapter of the American Red Cross; and the Smithsonian Relief Association.

The Museum was the scene of several receptions, the first being probably the largest, the most elaborate, and the most successful affair of its kind ever held in the Museum. This was the reception on November 23, 1921, by the city of Washington, through the Commissioners of the District of Columbia and a committee of citizens, to the delegates to the International Conference for the Limitation of Armament, when some 5,000 persons representing the official, social, and business life of Washington showed respect to the delegates to that conference.

On the evening of February 18, 1922, an informal reception and private view of the collection of Chihuahua pottery, loaned to the Museum by the Archæological Society of Washington was held in the public exhibition halls on the first floor. This was preceded by a lecture in the hall below by Dr. Hamilton Bell, on the Sculpture of Japan, under the auspices of the Archæological Society.

Another reception, on April 24, formed part of the program of the annual meeting of the National Academy of Sciences. This was in honor of Dr. and Mrs. H. A. Lorentz, of Leiden, and followed a lecture in the auditorium by Doctor Lorentz on Problems of Modern Physics.

A function which brought to the Museum representatives of the diplomatic corps and others was the formal presentation to the American Nation, on March 1, of the Herbert Ward collection of sculptures and African ethnology. In the northeast corner, first story, of the Natural History Building, surrounded by the works of her gifted husband and his unrivaled collection illustrating the handicrafts of the native African, the presentation was made by Mrs. Ward, and the donation accepted by Vice President Coolidge as chancellor of the Institution.

MISCELLANEOUS.

The publications issued by the Museum comprised 9 volumes and 78 separate papers. The Museum distribution of volumes and separates to libraries and individuals aggregated 97,806 copies. This, however, by no means indicates the number of its publications put in circulation during the year, for one of the separates of the Proceedings, on the Mosquitoes of the United States, issued in June, proved so popular that the War and Navy Departments arranged through the Superintendent of Documents for liberal distributions of the paper, and the Bureau of Public Health reprinted it.

The library received 2,023 volumes and 4,185 pamphlets, mainly through gifts and exchanges, bringing the Museum collection up to

0,681 books and 95,594 pamphlets. Typewritten lists of original rticles appearing in scientific periodicals reaching the Institution or the Smithsonian deposit at the Library of Congress have been irculated among the head curators of the Museum for their informaion and dissemination among the staff generally. There is a demand rom other Government departments and research organizations for opies of these lists which the Museum is unable to supply, through ack of mechanical equipment and assistants.

The number of visitors to the Natural History Building was 141,604; to the Arts and Industries Building, 262,151; to the Smithsonian Building, 83,384; and to the Aircraft Building, 46,380. All the Museum exhibition halls are open free to the public every weekday in the year. In addition those in the Natural History Building are open every Sunday afternoon, and this year those in the Smithsonian Building were open on Sunday afternoons in April. All the Museum offices and exhibition halls were closed, however, on November 11, 1921, on account of the burial of America's unknown soldier.

Respectfully submitted.

W. DE C. RAVENEL,
Administrative Assistant to the Secretary, in charge United States National Museum.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 2.

REPORT ON THE NATIONAL GALLERY OF ART.

SIR: I have the honor to submit the following report on the affairs of the National Gallery of Art for the year ending June 30, 1922.

The second year of the existence of the National Gallery as a separate administrative unit of the Smithsonian Institution closed with substantial reasons for satisfaction with the progress made, notwithstanding the fact that the accessions of art works fall short of the average for a number of previous years. The activities of the gallery continued in all essential respects in directions identical with those of the preceding year, the personnel being limited to a director and a secretary with clerical assistance, a guard, three watchmen, two laborers, and two charwomen.

Full information regarding the inception and growth of the gallery within the Institution and as a subsection of the department of anthropology of the National Museum may be found in the report of the secretary of the Institution for the preceding year, and more especially in an earlier publication (Bulletin 70, U. S. National Museum) prepared by former assistant secretary, Dr. Richard Rathbun.

Although art was recognized as a legitimate field of activity in the organization of the Institution, and on equal terms with science, and although numerous paintings and other works were acquired as the years passed, no special provision was made for their accommodation, space being assigned them in various places as the years passed, and no special provision was made for adding to the collection by purchase. Since the completion of the Natural History Building the collections have found space in that building, finally occupying the large central hall which was subdivided by screen partitions for their accommodation. This resource has, however, reached its limit, and additions accepted can find exhibition space only by storing the less important works previously acquired. This condition is most unfortunate since the inflow of gifts and bequests, upon which the gallery depends for accessions, is governed largely by the character of the accommodations afforded. The vital importance of this shortage of space will be appreciated when it is stated that the in-

ase of art works by means of gifts and bequests to the Institu-
n for the 10 years since appropriate exhibition space became
ilable in the new Natural History Building, ending June 30, 1921,
l aside from the rich accessions of the Freer gift, has averaged
estimated money value upward of $500,000 per year. The year
t closed has fallen far short of that valuation, not exceeding
),000, a result due in part, at least, to a knowledge of the real con-
ions on the part of such owners of collections as have reached the
ge where the future of their accumulations has become a matter
great concern.

The urgent need of a gallery building is thus strongly emphasized,
r it is apparent that should 10 years elapse before a building for
is purpose is erected, the loss due to delay will amount to several
nes the cost of a building. Another consideration of great im-
ortance is that the National Gallery is not limited in scope to paint-
g and sculpture, but has confined its activities mainly to this nar-
ow field because no space is available for assembling and displaying
ie full range of art products. It is thus most important that Amer-
ans should begin to realize, as have all other civilized nations, the
reat importance, the inestimable value, of art as an agency in the
lvancement to higher accomplishment in each and every branch of
tivity in which taste is an essential feature. We are the only civil-
ed nation that has not risen to a realization of the real value of art
id of the important functions of a National Gallery and that has
ot, save in the limited appropriations granted in 1921 and 1922 to
ie gallery fostered by the Smithsonian Institution, recognized art
ive as the handmaid of history or as an essential of architectural
nbellishment or landscape gardening. No important art work has,
or art's sake pure and simple, ever been purchased with the approval
f the United States Government. The Nation has received as gifts
nd bequests, art works amounting to more than ten millions in
ioney value, and has expended on their acquirement and care possi-
ly one two-hundredth part of that amount. The American people
ould at once arise to a realization of the fact that unless gallery
ace is provided for the accommodation of prospective additions,
is inflow of art works must practically cease. This would be a
ational misfortune and a disaster to the Capital of the Nation.

ART WORKS ACQUIRED DURING THE YEAR.

GIFTS AND BEQUESTS.

Portrait of President Ulysses S. Grant (three-quarter length) by
homas Le Clear, N. A. (1818-1882), painted in 1880 or 1881. Gift
Mrs. U. S. Grant, jr., of San Diego, Calif.

A large gravure reproduction of a portrait of Abraham Lincoln, taken from Douglas Volk's portrait of Lincoln painted from memory. Gift of Dr. Charles D. Walcott, Secretary of the Smithsonian Institution.

An oil painting entitled "The Signing of the Treaty of Ghent," by Sir A. Forestier, 1914. Presented to the Smithsonian Institution for the American people by the Sulgrave Institution of Great Britain and the United States, through Mr. Barron Collier, and accepted on behalf of the United States by Chief Justice William Howard Taft. Deposited by the Smithsonian Institution.

A painting by Daniel Garber, N. A., entitled "Tohickon," provided by the Henry Ward Ranger bequest through the council of the National Academy of Design, trustees of the fund.

Portrait of Edwin H. Harriman, being an artist's proof etching, one of 21 from the copper. Gift of Mrs. E. H. Harriman, New York City, through Dr. Charles D. Walcott.

Portrait bust (bronze) of Maj. Gen. George Owen Squier, Chief Signal Officer, United States Army, by M. W. Daikaar. Gift of General Squier.

LOANS.

Salutation (copy), by Albertinelli, and Holy Family (copy), by Andrea del Sarto, and an *erba* or painting in vegetable colors entitled "St. Anthony and the Lions," by an old monastic painter of the time of Fra Angelica and Fra Bartolommeo. Lent by the Rev. F. Ward Denys, of Washington, D. C. Doctor Denys lent also a Minton shield, two bronze reliefs of sacred subjects, and a small landscape in oil, which he withdrew before the close of the year.

Mother and Children (Early Morning), by A. W. Bougereau (1825–1905), and Sheep, by F. Brissot. Lent by Mr. and Mrs. Walter Tuckerman, Edgemoor, Md.

Deer, by J. A. Oertel, signed 1856. Lent by Mr. Charles Townsend Abercrombie Miller, of New York City.

Portrait of Abraham Lincoln, painted in 1865 by M. S. Nachtrieb (1835–1913). Lent by Mr. Anton Heitmuller, of Washington, D. C.

A series of 10 architectural drawings by Rossel Edward Mitchell, showing the artist's plan for furthering the International Historical Museum. Lent by Rossel Edward Mitchell, of Washington, D. C., and withdrawn at the close of the special exhibition during January, 1922.

Forty-six paintings, comprising kakemonos and framed pictures by Shunko Sugiura, of Tokyo, Japan. Lent by the artist and withdrawn at the close of the special exhibition, from January 18 to 27, 1922.

Series of 150 enlarged portraits in sepia, of Washington children, Underwood & Underwood, of Washington, D. C. Lent by Underwood & Underwood and withdrawn at the close of the special exhibition, February 20 to March 5, 1922.

Plaster bas-relief portrait of Prof. Francis James Child, Scholar (1825–1896), of Cambridge, Mass., executed in 1891 by Miss Leila Usher. Lent by Miss Leila Usher, of Boston, Mass.

A collection of 100 etchings and water-color drawings by Francisco Gonzales Gamarra, of Lima, Peru, illustrating ancient Peruvian art, recent historical art, and current subjects. Lent by Mr. Gamarra and withdrawn at the close of the special exhibition which was open to the public during June, 1922.

Bronze bust of Enrico Caruso (1873–1921), by Joseph Anthony Atchison; presented to the city of Washington for the Washington Opera House. Lent by the sculptor on behalf of the Washington Opera House.

Two old masters, Baptism of Christ by J. B. Tiepolo and a small landscape by R. Wilson, were added to his loan collection by Mr. Ralph Cross Johnson, of Washington, D. C.

A Moment's Rest, a large painting by William E. Norton (1843–1916), a realistic rendering of a team of four horses in charge of two men and a boy resting a moment in the shadow of a boat's hull by the water's edge while one of the men lights his pipe. Lent by the artist's daughters, Miss Gertrude M. Norton and Miss Florence E. Norton, of New York City.

Twenty-two portraits in pastel, being a series of life-size groups of Union and Confederate veterans of the Civil War, painted from life by Walter Beck, of Brooklyn, N. Y., 50 years after the battle of Appomattox; lent to the Smithsonian Institution by the artist through Mr. Walter M. Grant, of New York City. Deposited by the Institution. They are as follows:

MOSBY TRIPTYCH.

1. Left panel:
   1. Seated, left, Lieut. Fountain Beatty, Alexandria, Va.
   2. Seated right, John Russel, scout, Berryville, Va.
   3. Standing, Frank H. Rahm, Richmond, Va.
2. Central painting:
   4. Left, Charles Grogan, Baltimore, Md.
   5. Center, Col. John S. Mosby.
   6. Right, Dr. W. L. Dunn, Glade Springs, Va.
3. Right panel:
   7. Seated, Lieut. A. R. Richards, Louisville, Ky.
   8. Standing, Dr. James G. Wiltshire, Baltimore, Md.

FEDERAL FORCES.

4. Fifty Years After the Battle. Fifth New York Volunteer Infantry, First Duryée Zouaves, known as "The Fighting Fifth."

Left to right—

1. Trumpeter Robert Fofar, Brooklyn, N. Y.
2. Trumpeter Robert F. Daly (once the drummer boy), New York City.
3. John F. Connell, New York City.
4. Gilbert Boyd, Brooklyn, N. Y.
5. John Hefferman, Flushing, Long Island.

5. Map of the Peninsular Campaign, Fifth New York Volunteer Infantry, First Duryée Zouaves, known as "The Fighting Fifth."

1. Left upper, John C. L. Hamilton, Elmsford, N. Y.
2. Second, Edward Whiteside, Brooklyn, N. Y.
3. Seated, left, James Collins (address not given).
4. Seated, George F. Wilson, Mount Vernon, N. Y.
5. Seated, George A. Mitchell (address not given).
6. Standing, right, Samuel H. Tucker (with rifle), Ridgefield Park, N. J.

6. Sheathing the Sword.

1. Standing at left, Peter G. Wagner, New York City.
2. Seated, Lieut. William H. Uekele, New York City.
3. Second, standing, Alfred Atkins, Rosells Park, N. Y.
4. With sword and gun, Harry Jones, Long Island City, N. Y.
5. Extreme right, George H. Myers, New York City.

7. Comrades of the Fighting Fifth.

1. Left, Daniel J. Meagher, New York City.
2. Right, Albert Shellworth, Jersey City, N. J.

8. Drummer Boy of the Fighting Fifth After Gaines Mills.

Robert F. Daly, New York City, was a drummer boy before he was 13 and had seen 17 battles. He endeared himself to his regiment, the First Duryée Zouaves, especially at Gaines Mills, where he carried water to the men fighting, from a spring more than a mile to the rear. On the 7-day retreat to the ships the men carried the boy on their shoulders. When the regiment returned to New York, the boy's father discovered him in line, snatched him from the march, and sent him back to school.

9. The Signal. After the Battle of Big Bethel. John Tregaskis, Brooklyn, N. Y., Fifth New York Volunteer Infantry, Duryée Zouaves.

After the Battle of Big Bethel the Union forces were marching by parallel roads in pursuit of the enemy. During the night at the crossroads they fired at each other. To avoid a repetition of the error they used the white of their turbans around their arm as a signal.

10. The First Sharps Rifle. Homer D. Jennings, St. Cloud, Fla.

The Sharps rifle was used for the first time before Gaines Mills, Va. It was a repeating rifle and was used by the Fifth New York Volunteer Infantry, Duryée Zouaves. There were just enough of the rifles to arm the end men of companies, but the effect upon the opposing forces was bewildering and disastrous. General Sykes was in command.

11. Adelaide Smith. One of the first Army nurses.

She volunteered at Brooklyn, was with Grant's army through the Peninsular campaign, especially during the last years of the Civil War.

The silver cup at her left is the cup which she carried all through the war and with which she gave water to thousands of wounded men.

The One hundred and sixty-fifth New York, or Second Duryée Zouaves, Volunteer Infantry.

12. The left panel, four figures with the flags.
13. Center panel, five figures, Capt. Mathias Johnston, leader.
14. Third, or right, panel, five figures, with guns.

5. Doctor Beyea, chaplain, and noted as a singer at camp fires, Lafayette Post, New York. Painted in 1914.
6. Fisher of the Fifth New York Volunteer Infantry, Duryée Zouaves.
7. The Beecher Regiment Returning Its Flag to Plymouth Church.
   1. Seated, left, William Pink, Brooklyn, N. Y.
   2. Standing, left, Henry Metcalf, Brooklyn, N. Y.
   3. Standing, Richard Conlon, Brooklyn, N. Y.
   4. Standing, Charles Balogh, Brooklyn, N. Y.
   5. Center, Capt. Miles O. Reilly, Brooklyn, N. Y.
   6. Standing, Maj. M. K. Mille, Westfield, N. Y.
   7. Standing, George O. Fowler, Whitestone, L. I.
   8. Seated, right, Gen. Louis M. Peck, Brooklyn, N. Y.

THE OLD GUARD OF NEW YORK.

18. Capt. H. Cole Smith, Eighth Connecticut Volunteer Infantry.
    Willis White, Second Regiment New York Cavalry.
    Capt. Frank Huntoon, Vermont Cavalry.
9. Judge Blanchard, Wisconsin Volunteer Infantry.
    Col. G. K. Grismer, One hundred and ninety-second New York Volunteer Infantry.
    Maj. Charles H. Heust's, Massachusetts Volunteer Infantry.
0. Col. A. E. Dick, Twenty-second New York Volunteer Infantry.
    Admiral Charles D. Sigsbee, Fort Fisher, afterwards on the U. S. S. *Maine*, seated.
    Capt. James F. Wenman, who brought the obelisk from Egypt to Central Park, New York City.
    Brig. Gen. Albert F. Davis, Spanish War Veterans.
1. Capt. L. F. Barry, Seventy-first New York Volunteer Infantry.
    O. M. Chace, Seventh New York Volunteer Infantry.
    Maj. William R. Mitchell, Wiscons'n Volunteer Infantry.
    Capt. L. A. Newcome, Massachusetts Volunteer Infantry.
2. Capt. Arthur Jacobson, Seventy-first Regiment New York National Guard, and One hundred and seventy-sixth New York Volunteer Infantry.
    T. A. O'Mara, drummer boy, Fifty-ninth New York Volunteer Infantry.

THE NATIONAL PORTRAIT COLLECTION.

As announced in last year's report, a number of influential citizens desiring to preserve some pictorial record of the World War, organized a National Portrait Committee and arranged with a number of our leading portrait painters to paint portraits of certain distinguished leaders of America and other allied nations in the war with

Germany. The members of the committee as organized are: Hon. Henry White (chairman), Herbert L. Pratt (secretary and treasurer), Mrs. W. H. Crocker, Robert W. de Forest, Abram Garfield, Mrs. E. H. Harriman, Arthur W. Meeker, J. Pierpont Morgan, Charles P. Taft, Charles D. Walcott, and Henry Frick (since deceased).

Under this arrangement 20 portraits were painted and assembled in the National Gallery during the month of May, 1921. Later these were turned over to the American Federation of Arts for purposes of public exhibition, and at the close of the year they had been shown in the following cities: Princeton, N. J.; New Haven, Conn.; Boston, Mass.; Rochester, N. Y.; Cleveland, Ohio; Williamstown, Mass.; Amherst, Mass.; Buffalo, N. Y.; Cincinnati, Ohio; Indianapolis, Ind.; Pittsburgh, Pa.; Detroit, Mich.; Youngstown, Ohio; and Memphis, Tenn.

The portrait of Herbert Clark Hoover, by Edmund C. Tarbell, has since been added to the number.

THE McFADDEN COLLECTION.

At the close of the year preliminary steps had been taken toward the acceptance by the gallery of the loan of the McFadden collection of British masterpieces, comprising 44 notable examples of the work of Richard Parkes Bonington; John Constable, R. A.; Davis Cox; John Crome; Thomas Gainsborough, R. A.; George Henry Harlow; William Hogarth; John Hoppner, R. A.; Sir Thomas Lawrence, P. R. A.; John Linnell, sr.; George Morland; Sir Henry Raeburn, R. A.; Sir Joshua Reynolds, P. R. A.; George Romney; James Stark; George Stubbs, R. A.; Sir John Watson Gordon, R. A.; J. M. W. Turner, R. A.; and Richard Wilson, R. A. These paintings were acquired by John H. McFadden, Esq., of Philadelphia, Pa., recently deceased, during his lifetime, and by his will left in trust to the city of Philadelphia and to be intrusted to its custodianship when the Municipal Museum now in course of construction is completed. Notwithstanding the fact that there is much shortage of storage space in the halls occupied by the national collections, the acceptance of this rich collection for a limited period is regarded with much favor.

DISTRIBUTIONS.

Loans have been withdrawn by owners as follows: Portrait of Arthur Spicer, and portrait of Mary Brockerbrough Spicer, his wife, by Sir Peter Lely, lent by Miss Lucy Stuart Fitzhugh, were with-

lrawn by Mrs. Daisy Fitzhugh Ayers, executrix. Genevra dei Benci, .ttributed to Leonardo da Vinci, withdrawn by the Misses Janet R. and Mary Buttles. Christ in the Temple, by J. P. Tiepolo; The Doctor's Visit, by Jan Steen; Dedham Vale, by John Constable; and A Young Dutch Girl, by N. Drost, were withdrawn by Mr. Ralph Cross Johnson, but returned to the gallery before the close of the year with the exception of the last named. Five portraits: Col. Mark Hopkins in Continental Uniform (copy by Robert Hinckley); Dr. Mark Hopkins, Educator, by Sarony; Hon. Edward Everett, by Asher Brown Durand; Mrs. Edward Everett, by Gambardella; and Charlotte Brooks Everett, by George P. A. Healy; withdrawn by Mrs. Charlotte Everett Wise Hopkins (Mrs. Archibald Hopkins). Clearing Up, in the Berkshires, by James Henry Moser, was acquired by the Cosmos Club from Mrs. J. H. Moser, the owner, and withdrawn by the club. The Finding of Moses, attributed to the period of Paul Veronese, withdrawn by Mrs. F. S. Bloss. Sea, Sand and Solitude, by Edward Trenchard, withdrawn by the artist. Seven paintings: Portrait of Mr. Levi Woodbury, of New Hampshire; Portrait of Mrs. Levi Woodbury, of New Hampshire; Portrait of an Old Gentleman, and St. Dominic and the Christ Child, artists not given; Landscape, attributed to Berghem; Parrot and Fruit, and Flowers, attributed to Zuccarelli; from the collection lent by the Duchess de Arcos (Virginia Woodbury Lowery Brunetti), withdrawn by Mr. Woodbury Blair, attorney in fact for the duchess. Four paintings from the loan collection of the American Federation of Arts were distributed for the federation as follows: Ducks on the Bank, by Franz Grassel, sent to E. O. Summer at Brooklyn, N. Y.; Memory of the Tyrol, by J. P. Junghanns, and The Garden, by Max Clarenbach, to the Art Institute of Chicago, Chicago, Ill.; and Portrait of Mrs. Penelope Wheeler, by George Sauter, to Messrs Budworth & Sons, New York City.

Caresse Enfantine, a painting by Mary Cassatt, belonging to the Evans collection, the property of the gallery, was lent to the American Federation of Arts to be included in an exhibition of pictures of children under the auspices of the federation, to be shown in six southern cities: Louisville, Ky.; Roanoke, Va.; Savannah, Ga.; Charleston, S. C.; Richmond and Norfolk, Va. The work elicited much favorable comment, and was returned to its place in the gallery at the close of the exhibition.

THE HENRY WARD RANGER FUND.

The purchases made by the council of the National Academy of Design from the fund provided by the income from the Henry Ward

Ranger bequest, with the names of the institutions to which they have been assigned, are as follows:

Title.	Artist.	Date purchased.	Assigned.
11. Fall Round-Up.....	Carl Rungius, N. A...	Dec. 20, 1921	Corcoran Gallery of Art, Washington, D.C.
12. Repose of Evening...	Ben Foster, N. A.....	.....do.....	San Francisco Museum of Art (offered to).
13. Forest Primeval.....	Chas. S. Chapman, A. N. A.	.....do.....	Cleveland Museum of Art.
14. The Figurine.....	Wm. M. Paxton, A. N. A.	.....do.....	Wadsworth Atheneum and Morgan Memorial, Hartford, Conn.
15. Wilton Hills.....	Roy Brown, A. N. A..	.....do.....	Hackley Gallery of Fine Arts, Muskegon, Mich.
16. Gleam on Hilltops....	Gardner Symons, N. A.	Apr. 18, 1922	Montclair Art Association, Montclair, N. J.
17. White and Silver....	Dines Carlsen.....	.....do.....	Portland Society of Art, of Portland, Me.
18. Tohickon.....	Daniel Garber, N. A...	.....do.....	National Gallery of Art, Washington, D. C.
19. East Coast, Dominica, British West Indies.	Fredk. J. Waugh, N. A.	.....do.....	Museum of History, Science, and Art, Los Angeles, Calif.

THE REV. BRUCE HUGHES ALCOVE.

Two publications have been purchased from the funds received from the income of the Rev. Bruce Hughes bequest, and placed in the gallery library as a separate unit thereof. They are:

Zoffany, R. A., John: His Life and Works. 1735–1810. By Lady Victoria Manners and Dr. G. C. Williamson. London: 1920. (No. 1.)

Life and Works of Ozias Humphrey, R. A. By George C. Williamson, Litt. D. London: 1918. (No. 2.)

LIST OF PUBLICATIONS.

Holmes, W. H. Report on the National Gallery of Art for the year ending June 30, 1921. From the Report of the Secretary of the Smithsonian Institution for 1921, pp. 45–55.

The report of the director for the first year of the gallery as a separate unit under the Smithsonian Institution, the art collections having been associated previously with the department of anthropology in the United States National Museum.

Rose, George B. The Ralph Cross Johnson collection in the National Gallery at Washington. Annual Report of the Smithsonian Institution for 1920 (1922), pp. 679–690, pls. 1–24. Reprinted from Art and Archæology, Vol. X, No. 3, September, 1920. (Smithsonian Publication No. 2649).

A Catalogue of the Art Works of the Gallery embodying introductory matter and brief biographies of the painters and sculptors represented, with full-page illustrations of 25 of the works, was prepared and sent to the printer in October, 1921. At the end of the fiscal year, June 30, 1922, it has not appeared.

ILLUSTRATED LECTURE ON THE GALLERY.

As a means of promoting the development of the gallery by making its existence and collections known to the people, a lecture has been prepared by the director, the step being due largely to the urgent request of Mrs. Summers, wife of the Hon. J. W. Summers, Representative in Congress from Washington State, who has presented it a number of times in his home State. A brief introduction is followed by the presentation of 75 slides, mostly in color, representing the Smithsonian buildings and their surroundings and the more noteworthy works of painting and sculpture preserved in the gallery, with brief biographies of the artists. The lecture is to be placed at the disposal of such persons throughout the country as may desire to present it.

THE NATIONAL GALLERY OF ART COMMISSION.

The National Gallery Commission, organized in accordance with plans formulated by the Regents of the Smithsonian Institution, held its first or organizing meeting on June 25, 1921, and its first annual meeting on December 6 of that year. The proceedings of the organizing meeting are outlined in the annual report for that year, and the proceedings of the meeting of December 6 may be here briefly outlined.

The meeting was held in the Regents' Room of the Smithsonian Institution, members present being: Daniel Chester French (chairman), Herbert Adams, Edwin H. Blashfield, Joseph H. Gest, William H. Holmes (secretary ex-officio), John E. Lodge, Frank Jewett Mather, jr. (vice chairman), Gari Melchers, Charles Moore, James Parmelee, Herbert L. Pratt, Edward W. Redfield, Charles D. Walcott (ex-officio).

The report of the executive committee, which met at the Cosmos Club on the evening of the 5th of December, was submitted and reports of the 11 subcommittees were received. These committees are as follows:

1. American painting, Edward W. Redfield, chairman.
2. Modern European painting, Gari Melchers, chairman.
3. Ancient European painting, Frank Jewett Mather, jr., chairman.
4. Oriental art, John E. Lodge, chairman.
5. Sculpture, Herbert Adams, chairman.
6. Architecture, ———, chairman.
7. Mural painting, Edwin H. Blashfield, chairman.
8. Ceramics, Joseph H. Gest, chairman.
9. Textiles, ———, chairman.
10. Prints, James Parmelee, chairman.
11. Portrait gallery, Herbert L. Pratt, chairman.

The reports of the chairmen were received with interest, and numerous additions to the membership were made.

Consideration was given to the proposed exhibit of early Ameri can paintings and sculptures, to be held in the Louvre, Paris, in th near future, and the advisability of holding a special loan exhibi of American portraits in the National Gallery in Washingto received attention.

The feasibility of arranging in Washington a plan for the furthe development of the art interests, corresponding with that existin between the Louvre and the Luxemburg Galleries, Paris, was cor sidered, and steps were taken to determine the attitude of other ga leries with respect to the suggestion.

The urgent need of a National Gallery building to accommodat the collections now occupying the very limited space allowed thei in the Natural History Museum, and for future accessions, was cor sidered, and a resolution enumerating at some length the unfortu nate conditions existing and appealing to Congress for the limite fund required for the preparation of plans for a building wa adopted.

The very serious problems of the acceptance and rejection of pro fered works of art of all classes was discussed at length, and at th close of the meeting the advisory committee on acceptance of wor took necessary action with regard to such offerings for the year awaited consideration.

Respectfully submitted.

W. H. HOLMES.
Director, National Gallery of Art

DR. CHARLES D. WALCOTT.
Secretary, Smithsonian Institution.

APPENDIX 3.

:PORT ON THE FREER GALLERY OF ART.

iave the honor to submit the second annual report on the ery of Art for the year ending June 30, 1922.

THE COLLECTION.

arried on during the year includes the classification and g of Chinese, Japanese, and Tibetan paintings, Chinese and Chinese and Japanese pottery; the preliminary classi- Korean pottery and Chinese and Japanese stone sculp- jades; and the cataloguing of American paintings, draw- prints (inclusive of both etchings and lithographs). Im- ogress has been made also in the indispensable preservation il paintings.

BUILDING AND INSTALLATION.

o a temporary lack of applicable funds, work on the build- istallation was discontinued in July and was not resumed mber. The work accomplished, however, includes the con- –and in some instances the completion—of undertakings in the first annual report: The dais in gallery 18 has been l stained, the walls of 15 galleries and 2 corridors have been all of the storage bags and 27 of the storage boxes for screens have been completed, the Chinese and Japanese age has been finished and the panels themselves placed in nanent storage racks. The more important items of the undertaken are as follows: The dais in gallery 8 has been terrazzo floor has been laid in the areas thus exposed, and have been covered with canvas. The two large Chinese s purchased during the previous fiscal year were set in the allery 9 and repaired, practically all of the Whistler oil frames have been repaired and regilded, and 16 storage oil paintings have been constructed. The installation of s has been effected, as has also the correction of defective the reenforcing of the meeting rails of the double-hung throughout the basement floor. Bronze light standards i erected outside of the north and south entrances, the e been carpeted and furnished, oiling of the gallery floors

has been begun, electric meters have been installed, cheesecloth screens have been provided for the ventilators in all the storage rooms, and necessary drains have been set in the lower floor at various places.

PERSONNEL.

Grace Dunham Guest was appointed assistant curator on January 1, 1922.

Ruth W. Helsley resigned, her resignation taking effect March 1, 1922.

Ruth L. Walker was appointed to fill Mrs. Helsley's post as stenographer on February 15, 1922.

Carl W. Bishop was appointed associate curator on April 9, 1922.

Miss Guest was given a two months' leave, and she sailed for Europe on June 24, 1922, to act as delegate from the Freer Gallery of Art to the double centennial meeting of the Société Asiatique de Paris, and also to study collections of oriental art—especially ceramics—in England, France, and Germany.

Respectfully submitted.

J. E. LODGE,
Curator, Freer Gallery of Art.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 4.

:PORT ON THE BUREAU OF AMERICAN ETHNOLOGY.

ɔIR: In response to your request I have the honor to submit the lowing report on the field researches, office work, and other erations of the Bureau of American Ethnology during the fiscal ar ended June 30, 1922, conducted in accordance with the act of ngress approved March 4, 1921. The act referred to contains e following item:

American ethnology: For continuing ethnological researches among the ierican Indians and the natives of Hawaii, including the excavation and eservation of archeologic remains, under the direction of the Smithsonian stitution, including the necessary employees and the purchase of necessary oks and periodicals, $46,000.

The Indians of the United States are undergoing cultural changes ıich will in a short time so modify their material culture that little ill be left in that line for the ethnologist to study. It is impera-ve that the bureau exert itself in every way to record the material ılture and cult objects before the final change occurs. The objects ustrating this culture are now mainly preserved as heirlooms in remonies, and it is particularly desirable that these be described ıd their meanings interpreted before they pass out of use com-etely.

In 1904 the bureau inaugurated at Casa Grande a method of 'cheological work which has now been adopted by most of the stitutions working in the southwestern part of the United States. 'evious to this time archeologists rarely paid attention to the preser-ıtion of walls of ruins, but sacrificed these in their zeal to make large collections of artifacts as possible.

The bureau method of preserving the buildings for future students s now been adopted by other institutions, and work of this nature is ing carried on at Pueblo Bonito, Chaco Canyon, by the National ographic Society; at Chettro Kettle, in the same canyon, by the hool of American Research, Santa Fe, N. Mex.; at Pecos, N. Mex, the Phillips Academy, Andover, Mass.; and at Aztec by the Ameri-ı Museum of Natural History of New York. This method of arch-ogical work has created a great interest in archeological problems, indicated by the increased number of visitors to these ruins, and

has a great practical value as an asset to the communities in which these ruins are situated. It is the intention of the chief of the bureau to keep abreast of the other institutions in this regard.

In the past year the bureau has entered upon two new lines of work which it is believed will not only increase its scientific output by intensive research but also appeal strongly to the popular interest and to the diffusion of knowledge already acquired. For many years it has not been found practical to continue work on the Hawaiian Islands, which is mentioned as one of the important items of ethnological research in the above act of Congress. A meeting of the Pan Pacific Convention in Honolulu shows an increased interest in the study of the Polynesian islanders and their relation to the question of the peopling of America from the South Seas. Mr. Gerard Fowke, a collaborator of the bureau, was commissioned to attend this convention in the interest of the Smithsonian Institution, and he was instructed to gather whatever information he could in relation to the archeology of the people, if any, that preceded the Hawaiian race of the present day. Although his results were negative, it is gratifying that the bureau took part in this convention, as it opened up several lines of work in other islands which it may later be advantageous to follow. The Sandwich Islands lie practically on the periphery of the sphere of influence of the Polynesian culture, and local investigators have the Hawaiians well in hand. There is considerable to do in mapping the distribution of temples and ancient buildings, but this work is being rapidly done by local archeologists. It is desirable, however, that the bureau take up archeological work in Samoa or some island nearer the center of distribution of the race which has occupied almost all the land in the Pacific Ocean. The imperfect facilities for transportation from one island to another and the loss of time in transit is a serious handicap in this work.

A second line of research which promises even more to the scientific investigator and the tourist is a study of the material culture, especially the architecture, of the houses of the aborigines of Alaska. In the growth of the canning industry the Indians who formerly inhabited southern Alaska have been drawn away from their aboriginal villages, leaving them deserted and their totem poles and buildings to the mercy of fire and decay. The monuments are rapidly going to destruction, and it is very desirable that steps be immediately taken to preserve these buildings or a typical example of them before they are utterly destroyed.

One of these settlements, Kasaan, has already been made a national monument. Steps should be taken to preserve others.

Dr. T. T. Waterman was sent by the bureau to investigate the whole question—primarily to secure whatever vanishing ethnological data is still extant. He was instructed to gather information on the sym-

sm of the totem poles, the character of the houses, distribution lans, and whatever scientific data can be obtained from those still ıg who once inhabited these villages. This line of investigation eals very strongly to the chief from his knowledge of the growth ıterest of the Mesa Verde National Park. In 1908, when he began k on this park, only 25 tourists visited the Mesa Verde; this year, ², the number will reach 4,500. This shows a great growth of rest in the work being done there; and, as many tourists now seek ska in their summer vacation, one of these villages repaired would act many visitors. It is proposed to continue this work next mer with an enlarged appropriation.

'he work of the bureau in other lines has gone on with customary ɔr. The chief has repeatedly emphasized the necessity of rescu- the linguistic and sociological data of those Indian stocks that rapidly disappearing. It would be culpable if any of these guages should vanish completely without some record. Interest he aborigines of this continent has greatly increased in the last rs, especially on account of the stimulus of the movement called ee America First."

n addition to his purely administrative duties, considerable time been devoted by the chief to researches in the field. This work ; archeological in nature and a continuation of that of previous rs, and was carried on in cooperation with the National Park vice of the Department of the Interior.

'wo months were spent in the neighborhood of Far View House, first pueblo discovered on the Mesa Verde National Park, six rs ago. In the course of the work this fine ruin was thoroughly aired and put in such condition that it will now resist the wear the elements for several years. Ruins once repaired must be ched with care. On an average between 3,000 and 4,000 visitors, nly tourists, visit the Mesa Verde National Park and examine excavated ruins. Fifteen thousand visitors have already passed ɔugh Spruce-tree House and Cliff Palace, and the wear on the soft k of which the ruins are made is beginning to show. Unless stant vigilance is exercised the walls will fall within a short e. Any deterioration ought to be repaired annually. Tourists not now permitted to visit any of the ruins on this park without ıide, a regulation that has been strictly enforced during the past r.

ield work in May and June was devoted to excavating a ruin ed Pipe Shrine House, situated to the south of Far View House. s was apparently a communal building, or one not inhabited, ch was used by the people of the pueblo for sacred ceremonies. would appear that Pipe Shrine House, so called, bears the same tionship to Far View House that the Lower House of the Yucca

National Monument does to the Upper. The great kiva at Aztec, in New Mexico, lately excavated, bears a somewhat similar relationship to the main ruin, and there are several of the Chaco Canyon ruins where similar conditions prevail.

The site of Pipe Shrine House when work began was a low mound covered with sagebrush with a saucerlike depression in the center, not unlike several others in the immediate vicinity of Far View House. The removal of vegetation and débris and an excavation of the rooms revealed a rectangular building 70 by 60 feet, with walls averaging one story high. It had indications of a lofty tower in the middle of the western side, which must have imparted to the building somewhat the appearance of a church steeple or the minaret of a mosque. The large room was situated in the center of the ruin, its floor being about 20 feet below that of the other rooms. This subterranean room is a kiva, but it differs from others of like type on the park in that it has no fireplace in the center of the floor, no ventilator or deflector, and has eight mural pilasters instead of six to support the roof. The fallen walls within showed indications of a great conflagration, the stones and adobe being turned red and the walls turned bright red by the great heat. On the floor of the kiva was an inclosure set off by a semicircular wall where the action of fire was particularly evident. In the inclosure were found many votive offerings, the most numerous of which were a dozen clay tobacco pipes of various shapes and sizes, one or two decorated on their exteriors. These pipes, which are the first ever found on the Mesa Verde, evidently had been smoked by the priests and then thrown into the shrine. Besides the pipes the shrine also contained several fine stone knives, small decorated clay platters, various fetishes, and other objects. Pipe Shrine House was entered on the south by two doorways, midway between which a large pictograph of a coiled serpent was incised on a large stone set in the wall. To the south of the building there was a plaza surrounded by a retaining wall and directly opposite one of the entrances there are aboriginal steps which lead to a rectangular shrine 4 feet in size, in which were found a number of water-worn stones surrounding a large stone image of the mountain lion. The contents of this shrine were replaced, the mountain lion left in his original position, and the inclosure covered with a netting to prevent the possible removing of the objects from their places. Other shrines and several stone idols of considerable size were found in the neighborhood. The idols found at Pipe Shrine House represent the snake, mountain lion, mountain sheep, and bird—an important discovery, as previously only one stone animal idol had been found at the Mesa Verde Park.

One of the most instructive experiences of the archeologist is to ee a skeleton centuries old as it lies in the grave. One of the ancient eople of Pipe Shrine House was left in a prepared chamber for ourists to inspect.

The cemetery lies on the southeast corner of this ruin, and in it ere found several human burials from one of which a good skeleton as chosen to illustrate the manner of burial and the mortuary fferings. This skeleton was not removed from the grave but was urrounded by a stone wall forming a room, rectangular in shape, rotected by a grating and a waterproof roof. Visitors may now ee one of the skeletons of the race of cliff dwellers as he was placed n his grave more than 500 years ago; not a single bone has been noved from position. This is the first time in North American rcheology that an effort has been made to protect an Indian skeleton n situ, and the success of the method is self-evident, judging from he comments of visitors.

The pipes found in the shrine of the kiva have suggested "Pipe Shrine House" as a name for the building. It seems to have been given up to the rites and ceremonies of the inhabitants of the neighoring Far View House.

The second ruin excavated at Mesa Verde was formerly the habitation of one clan or of one social unit composed of relatives on the mother's side, on which account this ruin was given the name "One Clan House." It is situated about one-eighth of a mile south of Pipe Shrine House and consists of a circular subterranean room or iva of fine masonry surrounded by rooms for sleeping, others for rinding corn, and still others used as bins for corn or storage ooms. The kiva was the ceremonial or men's room.

One of the most instructive ruins excavated in 1922 is a round ower, 15 feet in diameter and 10 feet high, situated about 300 feet orth of Far View House. In front of this tower were found three ubterranean kivas under the fallen débris, in one of which were contructed walls of a square building, indicating secondary occupation, nd erected after the abandonment of the kiva. This tower and ccompanying kivas may be called Far View Tower, and the indicaions are that it was used for observations, particularly of the sun on he horizon at sunrise and sunset, in order to determine the time for lanting and other dates important for an agricultural people. These owers were probably rooms for the worship of the sun and other sky gods.

Some distance north of Far View Tower there were discovered in the cedars a number of large stones arranged vertically in rows projecting 3 feet above the surface of the ground. Excavation showed that these megaliths were walls of buildings of anomalous character, indicating a new type of architecture on the Mesa Verde. This

ruin, "Megalithic House," was not completely excavated, but all the others were repaired, the tops of the walls being covered with cement to prevent future erosion.

An important collection made by the chief in the course of the summer's work contains many rare and unique specimens, an account of which will later be published in a report on the excavations.

During his work at the Mesa Verde the chief gave camp-fire talks in the special amphitheater constructed for that purpose by the superintendent of the park. The average attendance on these talks was about 40 each evening, and at times, as on a visit of a convention of teachers, there were 150 listeners. He also spent considerable time daily taking parties over the new work which he was doing in the neighborhood of Far View House.

Ever since 1917 the chief has been attempting to have the sites of three clusters of towers in Utah withdrawn from private ownership and made into a national monument, to be called Hovenweep National Monument. Various circumstances have made it impossible to bring this about. During the past summer, however, Mr. Hatze, a Land Office surveyor, determined the metes and bounds of these three clusters and later Doctor Fewkes visited them in order to determine their present condition. He found that a settler had filed claims on the neighboring land, the adjoining one-quarter mile section, and erected his cabin. Some of the cabins in the neighborhood have stones remarkably like those of the towers: in other words, the necessity for immediate action, if these towers are to be preserved for posterity, is apparent, and the land on which they are situated should be withdrawn from settlement and the buildings put under the care of proper authorities. The three groups are known as the Square Tower, the Ruin Canyon group; the Holly and Keeley Towers; and the large ruin at the head of the Cajon Mesa called Cool Spring House, on account of the fine water which is found in the cave back of the cliff house.

During the fiscal year Dr. John R. Swanton, ethnologist, was engaged in extracting the words from his Hitchiti texts and adding them to his dictionary on cards of the Hitchiti language, and in preparing a grammatical sketch of 75 pages based on this material and that collected by Dr. A. S. Gatschet.

Much time was devoted to transferring words to cards from his Alabama texts, and from material in Alabama secured through native informants, into an Alabama-English dictionary. The first 25 pages of a grammatical sketch of this language have also been completed.

A comparison has been made between the Natchez language on the one hand and Koasati and Hitchiti on the other, in order to establish the position of Natchez in the Muskhogean linguistic stock. This

as not yet been set down in full, but all of the essential points have een typewritten on cards.

A paper of 44 pages has been prepared in elaboration of some cent discoveries regarding the Siouan peoples, discoveries which ave an especial bearing on the relationship of the various Siouan oups to one another.

A small amount of work has been done in continuance of Doctor anton's investigations into the economic basis of American Indian fe, particularly a study of aboriginal trails and trade routes.

The work of collecting stories dealing with the old clan divisions the Chickasaw Indians, undertaken by a Chickasaw at Doctor anton's suggestion, has met with gratifying success, 10 or 12 such ories having already been sent in.

During the fiscal year Mr. J. N. B. Hewitt, ethnologist, was engaged tirely in office work.

In his report for the fiscal year 1921 it was stated that a number Chippewa and Ottawa texts had been obtained in 1900 from r. John Miscogeon, an Ottawa mixed blood, then in Washington, C., and that Mr. George Gabaoosa, a mixed-blood Chippewa, had en employed to amend and to supply the Chippewa versions of ese texts. He also amplified the texts by substantial additions. his material covers 125 pages. Mr. Gabaoosa's fixed habit of writing is native language by means of the alphabet employed by the mis-ionaries made it needful that these texts thus written be translated nto the alphabet devised by Maj. J. W. Powell, founder of the Bureau f American Ethnology, for recording native Indian languages. This work of transliteration is one of considerable difficulty, because he aid of a native Chippewa speaker is not available in the office and Mr. Hewitt does not speak Chippewa.

In addition, Mr. Hewitt continued work in preparing the Muskogean material detailed in his last report.

Mr. Hewitt also continued his typing of the native Onondaga texts f the second part of the Iroquoian Cosmology, the first part having ppeared in the twenty-first annual report of the bureau. There are ow 255 pages of text material in final form.

As custodian of manuscripts Mr. Hewitt reports that no new linguistic records were added to the material permanently in his charge. ollaborators and others make temporary deposits of manuscripts pon which work is being done, and these are not catalogued as of ermanent deposit.

Mr. Hewitt spent much time and study in the preparation of data or official replies to correspondents of the bureau and of the Indian ffice also, the latter by reference only. The scope of the inquiries vers almost the entire range of human interest, often quite outside

of the specific researches properly coming within the activities of the Bureau of American Ethnology, but many are only requests for the derivation of some alleged native Indian place or proper name, often greatly Anglicized and mutilated. Some of these inquiries require more than a day's work to answer, as it is sometimes necessary to visit the Congressional Library in search of data. Data for more than 75 such inquiries were prepared.

Immediately following the death of the late Mr. James Mooney, Mr. Hewitt assisted Mrs. Mooney in assorting and separating the personal letters and papers of Mr. Mooney, some in advanced stages of preparation (the accumulation of more than 30 years' activity in an official capacity), from those which by their nature are official documents, and correspondence and photographs. More than a week was devoted to this work.

Before placing this material in the new store-room a rough classification was made of it. Five main groups were made, corresponding roughly with the five chief papers which Mr. Mooney had under way for a number of years before his demise, namely, (*a*) A Study of the Peyote and Its Accompanying Religious Cult; (*b*) A Monograph on the Population of the Indian Tribes When First Known; (*c*) A Paper on Cherokee Medical Formulas Recorded in the Sequoya Alphabet by Native Priests; (*d*) Kiowa Heraldry; and (*e*) A Study of the Cheyenne and Arapaho Shields. Owing to the peculiar chirography of Mr. Mooney and his excessive use of abbreviations peculiar to himself, this task proved to be a most tedious and difficult one.

Mr. Hewitt, who represents the Smithsonian Institution on the United States Geographic Board, attended all its regular meetings except one and all the special meetings of the board.

Mr. Francis La Flesche, ethnologist, continued during the fiscal year the task of assembling his notes for the second volume of his work on The Osage Tribe. The manuscript for the second volume, which embraces two versions of an ancient Osage ritual entitled, "No^{n}-zhi^{n}-zho^{n} Wa-tho^{n}," Songs of the Rite of Vigil, was completed and turned in to the bureau on February 25, 1922, where it awaits publication.

The first version of this ritual, which is counted as next in importance to the Hearing of the Sayings of the Ancient Men, published in the thirty-sixth annual report of the bureau, was given by Wa-xthí-zhi of the Puma gens of the Osage. This man had learned the ritual from his father, Wa-thú-ts'aga-zhi, who is said to have been one of the best informed No$^{n\prime}$-ho^{n}-zhi^{n}-ga in the tribal rites. With some difficulty Mr. La Flesche managed to persuade Sho$^{n\prime}$-ge-mo^{n}-i^{n}, of the Peacemaker gens, a more conservative man than Wa-xthí-zhi, to give the second version, which belongs to his gens. As this ritual pertains to war, old Sho$^{n\prime}$-ge-mo^{n}-i^{n} desired it to be clearly

understood that his gens performed the ceremonies of the ritual as a mere matter of form rather than as an actual owner of the rite. The office of his gens, he explained, was one that was instituted for the conservation of life and the maintenance of peace within the tribe and with other tribes not related to the Osage.

On the completion of the manuscripts for the second volume, Mr. La Flesche began the task of assembling his notes for the third volume, which will embrace two tribal rituals, the first of which is entitled "Wa-xó-be A-wa-thoⁿ," Songs Relating to the Wa-xó-be. The Wa-xó-be is the sacred hawk, the symbol of the valor of the Osage warrior. The second ritual is entitled "Çá Tha-dse Ga-xe," literally, The Making of the Rush, but meaning the Making of the Woven Rush Shrine for the Wa-xó-be.

On July 1, 1921, Dr. Truman Michelson, ethnologist, was at Tama, Iowa, continuing his work among the Fox Indians of that State. He completed gathering data on Fox mortuary customs and beliefs and restored texts appertaining to these and worked out a vocabulary as far as possible in the field. On the completion of this he restored phonetically a text previously collected on the Fox society known as "Those who worship the little spotted buffalo." He also worked out, as far as practical, the vocabulary to this text. At the close of August he returned to Washington and elaborated the material collected in the field. During the fiscal year Dr. Michelson submitted two manuscripts for publication, namely, "Notes on Fox mortuary customs and beliefs" and "Notes on the Fox society known as 'Those who worship the little spotted buffalo.'"

On May 25 Doctor Michelson left for the West to conduct researches among the Algonquian Indians of Iowa, Kansas, and Oklahoma. He stopped at Columbus, Ohio, to consult with Prof. L. Bloomfield. As a result of this conference it became apparent that Menomini is very clearly more closely related to Cree than to any other Algonquian language. He found the work at Shawnee, Okla., very difficult and expensive, owing to the fact that the Algonquian Indians of that State are scattered and distances are very great. However, during his short stay he secured sufficient information to show definitely that not only the Sauk but also the Kickapoo share many mortuary customs and beliefs with the Fox of Iowa. He thinks that these correspondences are too detailed and too numerous to be of independent origin and must be due to dissemination. This point regarding the Sauk and Fox is not novel, but it is regarding the Kickapoo. There are, however, some differences in the mortuary customs of all neighboring tribes. This last fact is not so well known. A detailed study of all three neighboring tribes, Siouan as well as Algonquian, on these matters alone can clear up the history of the

borrowings. He expects to obtain data on these points regarding the Shawnee and Potawatomi also.

The beginning of the fiscal year found Mr. J. P. Harrington, ethnologist, engaged in completing his bulletin on the Kiowa language, in several respects one of the most remarkable of the American Indian tongues. Aside from the phonetic system, with its unusual frequency of long vowels and diphthongs, we may point to the noun, several declensions of which form the singular by adding the same suffixes which other declensions use for forming the plural. These singulars of plural form are doubtless conceived as collective, for a personal pronoun in apposition also has the plural form. Thus pronominal agreement arises many times more complicated than that in the three-gendered languages of Europe, and is further involved by subjective, objective, and indirective pronouns largely combining to form a single syllable—a very terse yet involved system of speech. A number of Kiowa and Tanoan songs were found to have the melody following in exaggerated form the intonation of the spoken language. Thus the song "agoyopovi navi ha, wimbo winda" has the high tones of its words also high pitched in the song. This has led to the important discovery that certain melodies in intoned languages may take their clue from the intonation of the words. The Kiowa vocabulary secured is quite complete and forms an interesting contribution to the study of the place names, animal names, and plant names adopted by a tribe when it leaves its old home and moves to a new region. Mr. Harrington proceeded at the close of July to California to continue his studies of the Indians of the Chumashan area of that State. This expedition proved fruitful in results beyond all expectation. Special emphasis was laid on the place names, material culture, and language. More than 300 photographs of Indian places and historic landmarks were secured, together with a wealth of highly interesting and important data. The collecting of Indian place names in the Eastern States was neglected until too late, so that we have only a few names in distorted spelling and of uncertain etymology. It is still possible to obtain full data in many parts of the West, and there is scarcely any work which the Bureau can undertake which is more important or urgent, either in popular interest or as a help to the future ethnologist, historian, or archeologist.

Linguistic study is peculiarly important in this area, since it resurrects past culture and records perishing material for comparison with remote languages. Thirty new Ventureño songs were obtained from one singer, all with native words. The technique of the split-stick accompaniment and the dance steps were faithfully studied and the words were exhaustively compared with the corresponding prose forms.

Harrington's opinion was confirmed that the southern Cal-
a culture has many curious points of resemblance with that of
outhwest. Even the Pueblo plumed prayer stick, with sand
ngs and the ceremonial use of meal and seeds, have been found
mong the Californians.
ice during the fiscal year Mr. Harrington was temporarily
ferred to the Department of the Interior for special archive
At the close of the fiscal year he returned to Washington.

SPECIAL RESEARCHES.

ring the past fiscal year Miss Densmore has extended her
of Indian music by recording songs among the Yuma, Cocopa,
Yaqui tribes, making a total of nine tribes among whom this
has been done. Mohave songs were obtained from two mem-
of that tribe living on the Yuma Reservation, and one Maya
was recorded in the Yaqui village. Four manuscripts on In-
music were submitted, the titles being "Songs Concerning
Brother and His People, and Other Papago Songs," "The
Ceremony of the Papago," "A Cocopa Legend and its Songs,"
Deer Dance Songs of the Yuma, Yaqui, and Maya Indians."
ldition to her work on Indian music Miss Densmore has com-
l for publication two books on Chippewa culture with the
"Uses of Plants by the Chippewa," and "Chippewa Arts and
ms." The former book contains descriptions of the uses of
lants in medicine, food, dye, charms, and general utility, the
n on medicine being in tabulated form and showing the uses
e plant by other tribes, where such use is recorded, and its
y the white race, if such occurs. This tabulation shows the
nts for which a plant was used, the part of the plant utilized,
anner of its preparation, the dosage, and, in some instances,
me before an improvement in the condition of the patient was
ted. The latter book contains sections on Chippewa nouns
their structure, on the various industries by which the tribe
tained itself, and on the care and training of little children.
material was submitted in the form of two manuscripts, Cer-
Customs of the Chippewa in Ontario, Canada, and Chippewa
s and Their Structure, these titles corresponding to the prin-
subjects under consideration. Three brief trips in Minnesota
Wisconsin were made for this work. Miss Densmore also read
age proof of her book on Northern Ute Music.
February, 1922, Miss Densmore went to Yuma, Ariz., where
emained six weeks. During that time she made a brief trip
Cocopa settlement located near the Colorado River and about
iles from the Mexican boundary. The older Cocopa living

at this point came from Mexico about 18 years ago and neither they nor their children had a status in the United States. At this time, however, they were enrolled under the Yuma Agency, Miss Densmore assisting in the enrollment by writing their Cocopa names in simple phonetic spelling. Forty Cocopa songs were recorded, comprising songs of two representative dances and of a cremation legend. For this work it was necessary to employ two interpreters.

It is the custom of both Cocopa and Yuma to cremate their dead, and Miss Densmore witnessed a Yuma cremation soon after her arrival. The dead man had been a leading singer at cremations and the ceremony was given with the elaborateness which would be accorded a chief. The songs were very old and are seldom used at the present time. Miss Densmore obtained phonographic records of these songs, as well as of the Kurok or Memorial ceremony which is held each summer for the more important persons who have died during the year. Images of the deceased persons are carried in the dances of the Kurok and publicly burned. The history of these ceremonies, with the songs, was obtained from the oldest man who is an authority on the subject. It is the belief of these people that the spirit departs from the body in the flame of the cremation.

A new musical form was found among the Yuma and Cocopa, consisting of a "song cycle" which required an entire night for its rendition and is commonly called a "story." Each of these stories has its designated accompaniment. Among the Yuma the accompanying instruments are a gourd rattle and an inverted basket struck with a bundle of arrow-weed, a willow stick, or the palm of the hand. Sometimes two bundles of arrow-weed or two willow sticks are used, being held in the same hand. Specimens of these instruments were obtained, also a bamboo flute and two bamboo flageolets. The music of the latter was phonographically recorded. The Yuma songs included those of the treatment of the sick, those of games, and three interesting lullabies.

The work among the Yaqui was conducted at Guadalupe village, near Tempe, Ariz. The older Yaqui in this village were born in Mexico. These Indians have received no favors from the United States Government and support themselves by manual labor. They seem happy and contented in their little desert village. Miss Densmore witnessed their deer dance and later recorded the songs from one of the leading singers, a native of Mexico. The occasion of the dance was the celebration of Easter eve. The songs were accompanied by playing upon four half gourds. The Yaqui have two distinct forms of music, one which appears to be entirely native and the other showing a Mexican or Spanish influence.

A large proportion of the songs transcribed and heard during the past year were accompanied by a gourd rattle, and are of unusual

ical value, both in pleasing melody and rhythmic interest. This gests an inquiry as to whether the songs accompanied by the rattle generally more musical than those accompanied by the drum. s interesting to note that the songs of the Yuma and Cocopa mble each other but differ entirely from the songs of the Papago) live adjoining them. The songs of the Yaqui, so far as observed, er from both these tribes except in the frequent use of rests. The thm of the rattle in Yuma and Cocopa performances is more orate and contains more frequent changes than that of the ac- panying instrument in any tribe thus far studied. A correspond-) between the words of the song and the progressions of the ody is particularly evident in these songs.

arly in March, 1922, Dr. T. T. Waterman, ethnologist, proceeded laska, under temporary appointment in the bureau, with instruc- s from the chief to scrutinize certain native towns in southeastern ska. His purpose was to ascertain how many totemic monuments t there, and to get information concerning the carvings. The e of special interest was a former settlement of Alaskan Haida, wn as Kasaan. It was possible during the three months that tor Waterman spent in Alaska to make a rapid survey not only Kasaan but of the towns known as Village Island, Tongass, Cape , Klinkwan, Howkan, Sukwan, Klawak, and Tuxekan. Some ex- nely interesting monuments, including many tall and imposing m poles, were examined and photographed. Charts or sketch s were brought back from the field, which show the number of uments still standing in each town and their state of preserva- . The observer was fairly successful in obtaining from the In- ns an account of the meaning of the carvings on the poles, which e never been adequately described. In many cases the carvings r to mythical tales, which are often of a very interesting type.

n addition to the work on the totemic monuments, the observer rded a relatively complete list of the native place names in the heastern part of Alaska. Many hundreds of these names were red on the map of the region, and translations and explanations e obtained from the Indians. The work was fairly complete for area covered.

nder further instructions from the chief, Doctor Waterman ex- ned the coast line of the part of Alaska which he visited, with a r to discovering sites where archeological excavations might ibly be conducted. The results of this work were largely nega-

As a matter of fact only one site was found where there seemed e archeological remains. This hasty survey seemed to indicate archeological remains in this part of Alaska are extremely ty.

Returning to the bureau on June 15, Doctor Waterman began the preparation of a report on the Alaskan monuments.

In the fall of 1921, Mr. W. E. Myer investigated sites in South Dakota and western Missouri, known to have been occupied by the Omahas and Osages in early historic times, after they had come in contact with the whites but before they had been changed thereby to any considerable extent.

Especial attention was paid to any resemblance to the ancient cultures found in the valleys of the Ohio, Cumberland, and Tennessee Rivers. This line of research was suggested by certain traditions of both the Omahas and the Osages, and other branches of the great Siouan linguistic family, that they had at one time lived east of the Mississippi River, and after many wanderings, stopping here and there for years, finally reached their present homes in South Dakota and western Missouri.

Mr. Francis La Flesche reported that the traditions of his people, the Omahas, were that they had occupied two important villages on what the Omahas call "The Big Bend of the Xe," at some time in the seventeenth or eighteenth century.

Mr. Myer was enabled to locate these two ancient villages; one, Split Rock site on the Big Sioux River, at its junction with Split Rock River; the other where the Rock Island Railroad now crosses the Big Sioux River, about 10 miles southeast of Sioux Falls. It is here designated the Rock Island site.

Sometime in the seventeenth century the Omahas and Poncas removed from the Pipestone region in Minnesota and finally, after some further wanderings, built a fortified town on the Rock Island site. While living in this fortified place they were attacked and defeated by an enemy, most probably the Dakotas, and finally forced to leave the region. There is a tradition that they buried their dead from this fight in a mound. This tradition was confirmed by excavations made by Mr. A. G. Risty and Mr. F. W. Pettigrew, who report finding a considerable amount of human bones. Some glass beads and small copper bells of white man's make were also found in one of these mounds. There is evidence that this site was occupied somewhere between 1700 and 1725.

After leaving the Rock Island site, the Omahas and Poncas roved without long permanent settlements for several years, but finally returned to the Xe and built a permanent village at Split Rock at the junction of the Big Sioux and Split Rock Rivers.

Mr. Myer spent the month of October, 1921, in exploring this Split Rock site. Many interesting relics of the Omahas were here unearthed, which throw new light on the life of these people before they had been very much changed by contact with the whites.

The 30 mounds on the ridge between the two rivers mark the site that portion of the old town occupied by the Omahas. On a hill ıe-half mile to the east was a group of 10 more mounds, occupied ; the Poncas before they split away from the Omahas.

By following the clues furnished by the traditions, three low ounds were discovered on the tall ridge 1½ miles to the west. These ere said to have marked the lookouts for the main village; they ommand a view, ranging from 6 to 15 miles, on all sides. The ounds on the Split Rock site appear to have nearly all been used or burial.

The exploration of mound No. 1, on the Omaha section of the town, ıowed a beautiful little knoll on the edge of the steep, bluff-like bank f Split Rock River. In its soil the Indians dug a shallow pit, about 2 by 6 feet, and 2 feet deep. Here were placed bones belonging to ve bodies, several of which appeared to have been buried after decay f the flesh. One body appeared to have been closely flexed before ; was placed in the pit. The position of the skeleton of a horse with crushed frontal bone showed that when this body bundle had been laced in the pit, a large horse, about seven years of age, had been ed to the knoll, and there killed. Then, over all these, a low, round-opped mound, 60 feet across at the base and 5½ feet in height, had een raised.

Mound No. 2, the largest of the group, was round topped, 110 feet ross at the base, and 10 feet high. A rectangular charnel pit, 12 by 4 feet and 2 feet deep, had been dug in the surface of the soil near ıe center of the town. This pit was thoroughly lined or coated with white layer about one-eighth inch in thickness, made from calcined ones. The bottom and sides of the pit were then probably covered ith furs, now indicated by a thin layer of animal matter on the hite coating. Bones representing about 50 human beings had been ıid on the floor of this fur-lined pit.

Traces of the thin fur layer were also found on top of this solid ıass of human bones. Over this fur covering a layer of bark was laced, and upon this bark earth had been spread to a depth of rom 3 to 6 inches. The earth was then smoothed and pressed down, nd on this surface a white coating, similar to that on the bottom nd sides, had been spread. Only one small, cylindrical copper bead as found with all this mass of bones, and no object of white man's ıanufacture was found. There is evidence that this portion of the ite was occupied by the Omahas somewhere between 1725 and 1775.

While the Omahas and their kindred, the Poncas, lived together t the Split Rock site some of the most important events in their ıistory took place. The united Omahas and Poncas and their old nemies, the Cheyennes and Arikaras, here made a peace which vas concluded with great ceremony. At the urgent request of the

Arikara the sacred chant and dance of the calumet was used to cement this union.

In Vernon and Bates Counties, western Missouri, near the junction of the Osage and Marmiton Rivers, Mr. Myer found several sites known to have been occupied by the Osage Indians in early historic times, shortly after they had come in contact with the whites.

The largest Osage village in Vernon County was situated at Old Town, on Old Town Creek, about 3½ miles south of Pikes village of the Grand Osage. This site covers about 40 acres and is the best known of any of the Osage sites. It has yielded a large amount of iron axes, gun barrels, gunlocks, fragments of brass kettles, glass beads, and other articles of early white manufacture, as well as objects of purely aboriginal origin.

The most picturesque Indian site in this Osage region is Halleys Bluff, on the Osage River, about 1½ miles downstream from where the Marmiton and Marais des Cygnes unite to form the Osage River. There is evidence showing occupancy of this bluff by Indians long before the coming of the white man and probably before the coming of the Osages.

During the month of October, 1921, Mr. David I. Bushnell, jr., visited Scott Field, east of Belleville, Ill., for the purpose of getting airplane pictures of the Cahokia mounds. The commanding officer of the field, Maj. Frank M. Kennedy, appreciating the interest and importance of the work, detailed Lieuts. Harold R. Wells and Ashley C. McKinley, of the Air Service, to make the pictures. They succeeded in making some very interesting photographs of mounds in the vicinity of Cahokia, as well as of the great mound itself, but unfortunately the photographic apparatus at that time available at Scott Field was not suitable, and although the pictures obtained were not very clear, nevertheless no better results could have been secured with the cameras which they were obliged to use. Four of the pictures made by Lieutenants Wells and McKinley were reproduced as Figures 101, 102, 103, and 104 in Explorations and Field Work of the Smithsonian Institution in 1921 and should prove of special interest as the first photographs of American earthworks made from the air.

The article in which the four airplane pictures were used was prepared for the purpose of showing the great importance of the Cahokia group and of the other related groups to the north, west, and south of Cahokia. The southern group, although many of the units have been destroyed, is of special interest. It is situated near the left bank of the Mississippi, opposite Jefferson Barracks. Bits of pottery, chips of flint, and other traces of a settlement, together with stone-lined graves in the vicinity of the mounds, may indicate the position of a village of one of the Illinois tribes two centuries or more ago.

Mr. B. S. Guha's visit among the Utes and the Navaho at Towoac nd Shiprock, respectively, during the summer of 1921 was under- aken primarily with the object of finding any legends or myths bout the ancient Cliff Dwellers of Mesa Verde that might still sur- ive among these people, and incidentally to collect as much material bout their social institutions as possible.

Mr. Guha arrived at Towoac on July 14, 1921, and spent a couple f weeks visiting the different camps of the Utes. Among the Wimi- uche Utes, unfortunately, there does not appear to survive any egends or myths about the Mesa Verde. All that could be gathered rom the oldest living members of the tribe was that when their an- estors first came to the Ute Mountain from the north, the whole egion from the La Plata to the Blue Mountains and from Dolores o the San Juan was full of ruins such as now may be seen. They were already abandoned, but there were signs of the cultivation of orn about them.

After leaving Towoac Mr. Guha went to Shiprock, N. Mex., and stayed there until September 5, 1921. Unlike the Utes, the Navaho seem to possess survivals of myths about the ancient Cliff Dwellers of Mesa Verde. How far these legends have any historical back- ground it is difficult to say, but they at any rate suggest some earlier and closer relationhip between them and the people who lived in the ruins so liberally strewn over the entire region.

In September, 1921, Mr. John L. Baer, acting curator of Amer- ican archeology in the United States National Museum, made an investigation for the bureau of pictographic rocks in the Susque- hanna River. In the middle of the river between Bald Friar and Conowingo, Md., are a number of huge boulders of serpentine or gabbro, bearing inscriptions, a few of which have been heretofore described in the Tenth Annual Report of the Bureau of American Ethnology and in Volume CCC (Lancaster County) Second Geo- logical Survey of Pennsylvania. The largest and most important of these pictographic rocks were found to be on Miles' Island at the head of Gray Rock Falls. Large surfaces of these rocks seem to have been polished before the figures were pecked upon them. Pits, grooved lines indicating tally marks, circles with radiating spokes, concentric circles, faces, and fishlike outlines were the prevailing figures observed.

Other groups of rocks between this island and Conowingo showed equally interesting carvings, but not so profusely. A pyramid- shaped rock standing well out in the rough and dangerous rapids had several fish outlined near its apex. A slab which had been broken from its original position and which might have been used for a shad-dipping stand, was marked with outlines of two slender

fish and two tally marks. A number of interesting photographs and drawings of these pictographs were secured.

In connection with a reconnoitering trip among the prehistoric quarries and workshops along the Susquehanna in the spring of 1922, Mr. Baer again visited these pictographic rocks and secured additional drawings and a number of plaster casts of the more important figures. Prehistoric steatite quarries were traced from the west side of the river at this point to Deer Creek in Harford County, Md. Those showing most work and offering best opportunities for investigation are near Broad Creek in woodland owned by James McLaughlin, near Robinson's mill, and by W. C. Heaps, Mill Green, Harford County, Md.

At a workshop below Peach Bottom, Lancaster, Pa., a number of unfinished and broken banner stones of prochlorite were found. The source of the material was located a short distance east of Bald Friar, Md. A large number of unfinished banner stones of slate were found at the workshop on Mount Johnson Island above Peach Bottom where so many specimens had already been found. At Fishing Creek, Bare Island, and Henry Island evidences were found of considerable camp sites. At New Park, and Fawn Grove in York County, Pa., have been found large caches of rhyolite blades. At both of these places and also at Peach Bottom in the same county were many artifacts and indications of burial grounds. Interesting specimens were secured from most of these localities.

EDITORIAL WORK AND PUBLICATIONS.

The editing of the publications of the bureau was continued through the year by Mr. Stanley Searles, assisted by Mrs. Frances S. Nichols. The status of the publications is presented in the following summary:

PUBLICATIONS ISSUED.

Thirty-fifth Annual Report. Accompanying paper: Ethnology of the Kwakiutl (Boas). Pts. 1 and 2. 1,481 pp.

Thirty-sixth Annual Report. Accompanying paper: The Osage Tribe: Rite of the Chiefs; Sayings of the Ancient Men (LaFlesche). 604 pp., 23 pls.

Bulletin 73. Early History of the Creek Indians and their Neighbors (Swanton). 492 pp., 10 pls.

Bulletin 74. Excavation of a Site at Santiago Ahuitzotla, D. F. Mexico (Tozzer). 56 pp., 19 pls.

Bulletin 75. Northern Ute Music (Densmore). 213 pp., 16 pls.

PUBLICATIONS IN PRESS OR IN PREPARATION.

Thirty-fourth Annual Report. Accompanying paper: A Prehistoric Island Culture Area of America (Fewkes).

Thirty-seventh Annual Report. Accompanying paper: The Winnebago Tribe (Radin).

th Annual Report. Accompanying paper: An introductory Study
rts, Crafts, and Customs of the Guiana Indians (Roth).
h Annual Report. Accompanying paper: The Osage Tribe: The
'igil (LaFlesche).
. Archeological Investigations (Fowke).
. Villages of the Algonquian, Siouan, and Caddoan Tribes west of
issippi (Bushnell).
. Handbook of the Indians of California (Kroeber).
. Blood Revenge, War, and Victory Feasts among the Jibaro Indians
rn Ecuador (Karsten).
. Mandan and Hidatsa Music (Densmore).
. Excavations in the Chama Valley, New Mexico (Jeancon).

DISTRIBUTION OF PUBLICATIONS.

stribution of publications has been continued under the im-
charge of Miss Helen Munroe, assisted by Miss Emma B.
Publications were distributed as follows:

orts and separates	7,197
nd separates	6,403
ons to North American Ethnology	39
ons	13
ous publications	563
	14,215

pared with the previous year, there was an increase of 1,420
ons distributed. There was a decrease of 57 names in the
ist.

ILLUSTRATIONS.

e Lancey Gill, illustrator, with the assistance of Mr. Albert
ney, continued the preparation of the illustrations of the
A summary of this work follows:

olor drawings, including maps, diagrams, etc., intended for use rations for publication	159
ns, including photographs retouched, mounted, and made r engraving	1,282
n proof edited	1,034
hic proof examined at Government Printing Office	36,000
hic work, negatives of ethnologic and archeologic subjects	242
eloped from field exposures	138
distribution and office use	538
copies	1,987

weeney was detailed for the month of June to prepare 100
negatives for the National Zoological Park.

LIBRARY.

ference library continued in the immediate care of Miss Ella
ibrarian, assisted by Miss Julia S. Atkins and Mr. Samuel
r.

During the year 406 books were accessioned, of which 64 were acquired by purchase, 120 by binding of periodicals, and 142 by gift and exchange. The periodicals currently received number about 900, of which 33 are received by subscription, the remainder being received through exchange. The bureau has also received 159 pamphlets, giving at the close of the year a working library of 24,561 volumes, 14,936 pamphlets, and several thousand unbound periodicals.

In addition to the regular routine of library work, Miss Leary has been able, with the assistance of Miss Atkins, to make rapid progress toward the completion of the new subject catalogue, with the result that about 18,000 catalogue cards have been filed during the fiscal year.

The greatest need of the library is for more shelf room for its publications, due to its growth during the past few years. The library is greatly hampered by this need.

The posting of the monthly bulletin of new publications was continued throughout the year.

During the year many students not connected with the Smithsonian Institution found the library of service in seeking volumes not obtainable in other libraries of the city. The library was used also by the Library of Congress and officers of the executive departments, and out-of-town students have called upon the library for loans during the year. In addition to the use of its own library it was found necessary to draw on the Library of Congress from time to time for the loan of about 400 volumes.

There were bound during the year 200 books, pamphlets, and serial publications.

COLLECTIONS.

The following collections, acquired by members of the bureau or by those detailed in connection with its researches, have been transferred to the United States National Museum:

66880. Collection of Alaskan ethnologica made by the late Rev. Sheldon Jackson and purchased by the bureau from his daughter, Miss Leslie Jackson.

67105. Shell and pottery specimens from Ten Thousand Islands, Florida, collected during the spring of 1921 by Mr. William Dinwiddie, Metuchen, N. J.

67112. Four stone objects and two pottery fragments from "Bear" and "Lewis" mounds, near Portsmouth, Ky., collected by Mr. Gerard Fowke during the spring of 1921.

67225. Four pieces of pottery and eight pieces of flint, collected by Prof. J. E. Pearce, of Austin, Tex., in eastern Texas during the summer of 1919.

67258. Collection of shell objects presented to the bureau by Charles T. Earle, of Palma Sola, Fla., found near Shaws Point, Fla.

67274. Collection of archeological objects secured by Dr. J. Walter Fewkes from the Mesa Verde National Park, Colo., in the spring of 1920.

67398. Chunkey stone from Rowena, Ky.

'451. Archeological objects collected near Austin and at "Burnt Rock" mounds, Texas, by Prof. J. E. Pearce and Dr. J. Walter Fewkes.
7572. Collection of skeletal material secured by Mr. William E. Myer in the vicinity of the junction of Split Rock River and Big Sioux River, S. Dak.
7730. Archeological material collected in 1920 by Mr. W. E. Myer for the Bureau of American Ethnology in Williamson and Davidson Counties, Tenn.
8254. Collection of archeological objects from Rio Grande Valley, N. Mex., turned over to the bureau by Secretary Charles D. Walcott.
8255. Fragments of pottery from Indian burial on the Catawba River, N. C., sent to the bureau by J. Albert Holmes, Construction, N. C.
8256. Collection of Indian implements found on the terraces of Upatoi Creek, and Chattahoochee River, Muscogee County, Ga., sent to the bureau by Mr. A. T. Sweet, Columbus, Ga.

PROPERTY.

Furniture and office equipment were purchased to the amount of $134.97.

MISCELLANEOUS.

Clerical.—The correspondence and other clerical work of the office has been conducted by Miss May S. Clark, clerk to the chief. Mrs. Frances S. Nichols assisted the editor. Mr. Anthony W. Wilding served as messenger and typist to the chief.

Personnel.—Miss Julia S. Atkins received a permanent appointment as stenographer March 1, 1922.

Dr. T. T. Waterman, who was appointed as temporary ethnologist March 1, 1922, was detached from the bureau roll July 1 for six weeks in order to lecture in the summer school of Columbia University, New York City.

Mr. Samuel H. Miller, messenger boy in the library, resigned June 23, 1922.

Mr. James Mooney, ethnologist, died December 22, 1921.

Respectfully submitted.

J. WALTER FEWKES,
Chief, Bureau of American Ethnology.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 5.

REPORT ON THE INTERNATIONAL EXCHANGES.

SIR: I have the honor to submit the following report on the operations of the International Exchange Service during the fiscal year ending June 30, 1922:

The appropriation granted by Congress for the support of the service during the year was $50,000, the same as the amount for the year 1921. The excess of these appropriations over those formerly allowed for the system of international exchanges was designed to meet the extraordinary expenses of forwarding, at the high ocean and other transportation rates, the accumulations of packages that were withheld awaiting the resumption of shipments to certain foreign countries. In addition to the above appropriation, the usual allotment of $200 for printing and binding was allowed by Congress. The repayments from departmental and other establishments aggregated $5,510.74, making the total resources available for carrying on the system of exchanges for the year, $55,710.74.

During the year 1922 the total number of packages handled was 383,157, a decrease from the number for the preceding year of 68,314. These packages weighed a total of 592,600 pounds, a decrease of 12,712. While in consequence of the return to nearly normal conditions the figures just given show a falling off in the number and weight of packages passing through the service from those handled last year, the work during the fiscal year 1922 exceeded by 41,490 the number of packages handled in 1914, just prior to the World War, which indicates a steady increase in the work of the office.

The number and weight of the packages of different classes are given in the following table:

	Packages.		Weight.	
	Sent.	Received.	Sent.	Received.
			Pounds.	*Pounds.*
United States parliamentary documents sent abroad	133,363	.....	82,905	.....
Publications received in return for parliamentary documents	.....	2,687	.....	7,782
United States departmental documents sent abroad	128,755	.....	191,502	.....
Publications received in return for departmental documents	.....	7,111	.....	22,600
Miscellaneous scientific and literary publications sent abroad	82,730	.....	222,741	.....
Miscellaneous scientific and literary publications received from abroad for distribution in the United States	.....	28,511	.....	65,670
Total	344,848	38,309	497,148	95,452
Grand total	383,157		592,600	

It should be stated here that the disparity in the above figures be-
een the number of packages sent and those received is accounted
r in part by the fact that packages transmitted abroad often con-
in only one publication, while those received in return frequently
mprise many volumes. In some instances, especially in the case of
blications received in exchange for parliamentary documents, the
m "package" is applied to large boxes containing many separate
blications. Furthermore, many returns for publications sent
road reach their destinations in this country through the mails and
t through the exchange service.

I stated last year that the steps taken by the Institution looking to
e reopening of exchanges with Rumania and the establishment of
lations with the newly formed Government of Jugoslavia had not
d to a successful result. The Governments of both those countries
pressed a desire to have the shipment of international exchanges
sumed as soon as conditions would permit, but nothing further was
ard from either of them. An offer made during the latter part of
e year by the Institutul Meteorologic Central, Bukharest, and the
cadémie Royale Serbe des Sciences et des Arts, Belgrade, to serve
agencies for their respective countries was therefore accepted by
e Institution, and a shipment of 26 boxes was made to the former
d 69 to the latter. The exchange agency in Rumania was formerly
e Academia Romana and in Serbia the Ministère des Affaires
trangères.

During the year exchange relations have been established with the
wly formed Governments of Esthonia, Far Eastern Republic,
atvia, Lithuania, and Ukrainia.

The conditions in Russia and Turkey have not yet improved suffi-
ently to warrant the Institution in taking steps to renew the ex-
ange of publications between those countries and the United States.

The Institution requested several New York forwarding agents to
bmit rates for handling and forwarding exchange consignments
road, the rates to take effect on July 1, 1922. The proposal sub-
itted by the present agents, Messrs. Davies, Turner & Co., 39 Pearl
treet, New York City, was found to be the lowest, and shipments
ill therefore continue to be sent to foreign countries through that
rm.

There were shipped abroad during the year 3,215 boxes, being an
ncrease of 463 over the number for the preceding 12 months. This is
he largest number of boxes forwarded through the exchange service
n one year and is due in great measure to the opening of exchange
elations with Jugoslavia and several of the independent Russian
States, the packages for those countries having accumulated at the
nstitution for several years. The number of boxes shipped was fur-

ther augmented by the forwarding to Austria of a large numbe United States patent specifications that were held during the wa

Of the total number of boxes sent abroad 394 contained full se United States official documents for foreign depositories, and 2 included departmental and other publications for depositorie partial sets and for miscellaneous correspondents.

It is gratifying to state that during the year the office has been to return to its regular schedule of shipments to foreign count Consignments are now being forwarded to Great Britain and many weekly, to France and Italy semimonthly, and to all o countries monthly.

The number of boxes sent to each country is given in the follo table:

Consignments of exchanges for foreign countries.

Country.	Number of boxes.	Country.	Nu of b
Argentina	119	Italy	
Austria	203	Jamaica	
Belgium	89	Japan	
Bolivia	3	Latvia	
Brazil	49	Netherlands	
British Colonies	15	New South Wales	
British Guiana	1	New Zealand	
Bulgaria	9	Nicaragua	
Canada	30	Norway	
Chile	36	Paraguay	
China	164	Peru	
Chosen	1	Poland	
Colombia	26	Portugal	
Costa Rica	18	Queensland	
Cuba	5	Rumania	
Czechoslovakia	128	Salvador	
Danzig	5	Siam	
Denmark	41	South Australia	
Ecuador	16	Spain	
Egypt	11	Sweden	
Esthonia	11	Switzerland	
Far Eastern Republic	2	Syria	
Finland	20	Tasmania	
France	201	Ukrainia	
Germany	523	Union of South Africa	5
Great Britain and Ireland	364	Uruguay	
Greece	17	Venezuela	
Guatemala	3	Victoria	
Haiti	6	Western Australia	
Honduras	2	Yugoslavia	
Hungary	54		
India	7	Total	

FOREIGN DEPOSITORIES OF UNITED STATES GOVERNMENTAL DOCUMENTS.

The number of sets of governmental documents forwarded abroad through the International Exchange Service to foreign depositories has been reduced during the year by one, the partial set formerly sent to Montenegro having been discontinued as that country is now a part of the Kingdom of the Serbs, Croats, and Slovenes, which receives a full set. The total number of sets of governmental documents distributed through the service is therefore 95, 57 full and 38 partial. The set sent to the Kingdom of the Serbs, Croats, and Slovenes is entered in the following list under Jugoslavia.

The name of the Austrian depository has been changed from the Statistische Zentral Kommission to the Bundesamt für Statistik.

A complete list of the depositories is given below:

DEPOSITORIES OF FULL SETS.

ARGENTINA: Ministerio de Relaciones Exteriores, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
BADEN: Universitäts-Bibliothek, Freiburg. (Depository of the State of Baden.)
BAVARIA: Staats-Bibliothek, Munich.
BELGIUM: Bibliothèque Royale, Brussels.
BRAZIL: Bibliotheca Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca de la Universidad Nacional de La Plata. (Depository of the Province of Buenos Aires.)
CANADA: Library of Parliament, Ottawa.
CHILE: Biblioteca del Congreso Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
COLOMBIA: Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA: Secretaria de Estado (Asuntos Generales y Canje Internacional), Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Kongelige Bibliotheket, Copenhagen.
ENGLAND: British Museum, London.
FRANCE: Bibliothèque Nationale, Paris.
GERMANY: Deutsche Reichstags-Bibliothek, Berlin.
GLASGOW: City Librarian, Mitchell Library, Glasgow.
GREECE: Bibliothèque Nationale, Athens.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
HUNGARY: Hungarian House of Delegates, Budapest.
INDIA: Imperial Library, Calcutta.
IRELAND: National Library of Ireland, Dublin.
ITALY: Biblioteca Nazionale Vittorio Emanuele, Rome.
JAPAN: Imperial Library of Japan, Tokyo.
LONDON: London School of Economics and Political Science. (Depository of the London County Council.)
MANITOBA: Provincial Library, Winnipeg.
MEXICO: Instituto Bibliográfico, Biblioteca Nacional, Mexico.

NETHERLANDS: Bibliotheek van de Tweede Kamer der Staten-Generaal, The Hague.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Storthingets Bibliothek, Christiania.
ONTARIO: Legislative Library, Toronto.
PARIS: Préfecture de la Seine.
PERU: Biblioteca Nacional, Lima.
POLAND: Bibliothèque du Ministère des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca Nacional, Lisbon.
PRUSSIA: Preussische Staatsbibliothek, Berlin, N. W. 7.
QUEBEC: Library of the Legislature of the Province of Quebec, Quebec.
QUEENSLAND: Parliamentary Library, Brisbane.
RUSSIA: Public Library, Petrograd.
SAXONY: Oeffentliche Bibliothek, Dresden.
SOUTH AUSTRALIA: Parliamentary Library, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SWEDEN: Kungliga Biblioteket, Stockholm.
SWITZERLAND: Bibliothèque Fédérale Centrale, Berne.
TASMANIA: Parliamentary Library, Hobart.
TURKEY: Department of Public Instruction, Constantinople.
UNION OF SOUTH AFRICA: State Library, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
VENEZUELA: Biblioteca Nacional, Caracas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
WURTTEMBERG: Landesbibliothek, Stuttgart.
YUGOSLAVIA: Ministère des Affaires Etrangères, Belgrade.

DEPOSITORIES OF PARTIAL SETS.

ALBERTA: Provincial Library, Edmonton.
ALSACE-LORRAINE: Bibliothèque Universitaire et Régionale de Strasbourg, Strasbourg.
BOLIVIA: Ministerio de Colonización y Agricultura, La Paz.
BRAZIL: Bibliotheca da Assemblea Legislativa do Estado do Rio de Janeiro, Nictheroy.
BREMEN: Senatskommission für Reichs- und Auswärtige Angelegenheiten.
BRITISH COLUMBIA: Legislative Library, Victoria.
BRITISH GUIANA: Government Secretary's Office, Georgetown, Demerara.
BULGARIA: Ministère des Affaires Etrangères, Sofia.
CEYLON: Colonial Secretary's Office (Record Department of the Library), Colombo.
ECUADOR: Biblioteca Nacional, Quito.
EGYPT: Bibliothèque Khédiviale, Cairo.
FINLAND: Central Library of the State, Helsingfors.
GUATEMALA: Secretary of the Government, Guatemala.
HAMBURG: Senatskommission für die Reichs- und Auswärtigen Angelegenheiten.
HESSE: Landesbibliothek, Darmstadt.
HONDURAS: Secretary of the Government, Tegucigalpa.
JAMAICA: Colonial Secretary, Kingston.
LATVIA: Ministry of Foreign Affairs, Riga.

LIBERIA: Department of State, Monrovia.
LOURENÇO MARQUEZ: Government Library, Lourenço Marquez.
LÜBECK: President of the Senate.
MADRAS, PROVINCE OF: Chief Secretary to the Government of Madras, Public Department, Madras.
MALTA: Lieutenant Governor, Veletta.
NEW BRUNSWICK: Legislative Library, Fredericton.
NEWFOUNDLAND: Colonial Secretary, St. John's.
NICARAGUA: Superintendente de Archivos Nacionales, Managua.
NORTHWEST TERRITORIES: Government Library, Regina.
NOVA SCOTIA: Provincial Secretary of Nova Scotia, Halifax.
PANAMA: Secretaria de Relaciones Exteriores, Panama.
PARAGUAY: Oficina General de Inmigracion, Asuncion.
PRINCE EDWARD ISLAND: Legislative Library, Charlottetown.
RUMANIA: Academia Romana, Bukharest.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SIAM: Department of Foreign Affairs, Bangkok.
STRAITS SETTLEMENTS: Colonial Secretary, Singapore.
SWITZERLAND: Library of the League of Nations, Palace of Nations, Quai de Leman, Geneva.
UNITED PROVINCES OF AGRA AND OUDH: Undersecretary to Government, Allahabad.
VIENNA: Bürgermeister-Amt der Stadt Wien.

INTERPARLIAMENTARY EXCHANGE OF OFFICIAL JOURNALS.

The Library of the League of Nations, Geneva, Switzerland, and the Rügi Raamatukogu, Toompea, Reval, Esthonia, have been added to the list of those countries receiving the daily Congressional Record.

Mention was made in my last report of the fact that the Government of Poland had entered into the immediate exchange with the United States, although it had not signified its adherence to the Brussels convention providing for such exchange. During the year the Institution was advised through diplomatic channels that the Polish Government, in the exercise of the privilege granted to non-signatory States by Article 2 of Exchange Convention B of March 15, 1886, had declared its adherence to that diplomatic instrument.

Following is a complete list of the addresses to which the daily Congressional Record is now sent:

ARGENTINA: Biblioteca del Congreso Nacional, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bibliothek des Nationalrates, Wien I.
BADEN: Universitäts-Bibliothek, Heidelberg.
BELGIUM: Bibliothèque de la Chambre des Représentants, Brussels.
BOLIVIA: Cámara de Diputados, Congreso Nacional, La Paz.
BRAZIL: Bibliotheca do Congresso Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca del Senado de la Provincia de Buenos Aires, La Plata.
CANADA:
Library of Parliament, Ottawa.
Clerk of the Senate, Houses of Parliament, Ottawa.

COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA:
Biblioteca de la Cámara de Representantes, Habana.
Biblioteca del Senado, Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Rigsdagens Bureau, København.
ESTHONIA: Rüigi Raamatukogu, Toompea, Reval.
FRANCE:
Bibliothèque de la Chambre des Députés, au Palais Bourbon, Paris.
Bibliothèque du Sénat, au Palais du Luxembourg, Paris.
GREAT BRITAIN: Library of the Foreign Office, Downing Street, London, S. W. 1.
GREECE: Library of Parliament, Athens.
GUATEMALA: Biblioteca de la Oficina Internacional Centro-Americana, 8a Calle Poniente No. 1, Ciudad de Guatemala.
HONDURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
HUNGARY: Bibliothek des Abgeordnetenhauses, Budapest.
ITALY:
Biblioteca della Camera dei Deputati, Palazzo di Monte Citorio, Rome.
Biblioteca del Senato del Regno, Palazzo Madama, Rome.
LIBERIA: Department of State, Monrovia.
NEW SOUTH WALES: Library of Parliament, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
PERU: Cámara de Diputados, Congreso Nacional, Lima.
POLAND: Monsieur le Ministre des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca do Congresso da Republica, Lisbon.
PRUSSIA: Bibliothek des Abgeordnetenhauses, Prinz-Albrechtstrasse 5, Berlin, S. W. 11.
QUEENSLAND: The Chief Secretary's Office, Brisbane.
RUMANIA: Bibliothèque de la Chambre des Députés, Bukharest.
RUSSIA: Sendings temporarily suspended.
SPAIN:
Biblioteca del Congreso de los Diputados, Madrid.
Biblioteca del Senado, Madrid.
SWITZERLAND:
Bibliothèque de l'Assemblée Fédérale Suisse, Berne.
Library of the League of Nations, Geneva.
TRANSVAAL: State Library, Pretoria.
UNION OF SOUTH AFRICA: Library of Parliament, Cape Town.
URUGUAY: Bibliotheca de la Cámara de Representantes, Montevideo.
VENEZUELA: Cámara de Diputados, Congreso Nacional, Carácas.
WESTERN AUSTRALIA: Library of Parliament of Western Australia, Perth.
YUGOSLAVIA: Library of the Skupshtina, Belgrade.

The total number of copies of the daily Congressional Record set aside by law for exchange with foreign legislative bodies is 100. It will be seen from the above that this exchange is conducted with 44 establishments.

FOREIGN EXCHANGE AGENCIES.

It will be noted from the following list of exchange agencies that shipments are now being made to Esthonia, the Far Eastern Republic, Yugoslavia, Latvia, Lithuania, Rumania, and Ukrainia.

The Teachers' College at Vladivostok is the agency for the Far Eastern Republic; the Ministry of Foreign Affairs at Riga, for Latvia; the Académie Royale Serbe des Sciences et des Arts at Belgrade, for Yugoslavia; and the Institutul Meteorologic Central in Bukharest, for Rumania. Only a few packages have thus far been received for Lithuania, and, for the present, transmissions to that country will be made through the mails. Shipments were made to the university libraries at Dorpat and at Odessa, with the request that those libraries distribute the consignments and also act as the agencies for Esthonia and Ukrainia, respectively. As these shipments were not made until near the close of the year, replies have not yet been received from those establishments. It is anticipated, however, that both will consent to serve as exchange agencies.

A complete list of the foreign exchange agencies or bureaus is given below:

ALGERIA, *via* France.
ANGOLA, *via* Portugal.
ARGENTINA: Comisión Protectora de Bibliotecas Populares, Calle Cordoba 931, Buenos Aires.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
AZORES, *via* Portugal.
BELGIUM: Service Belge des Echanges Internationaux, Rue des Longs-Chariots 46, Brussels.
BOLIVIA: Oficina Nacional de Estadística, La Paz.
BRAZIL: Serviço de Permutações Internacionaes, Bibliotheca Nacional. Rio de Janeiro.
BRITISH COLONIES: Crown Agents for the Colonies, London.
BRITISH GUIANA: Royal Agricultural and Commercial Society, Georgetown.
BRITISH HONDURAS: Colonial Secretary, Belize.
BULGARIA: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
CANARY ISLANDS, *via* Spain.
CHILE: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
CHOSEN: Government General, Keijo.
COLOMBIA: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CZECHOSLOVAKIA: Service Tchécoslovaque des Echanges Internationaux, Bibliothèque de l'Assemblée Nationale, Prague 1–79.
DANZIG: Stadtbibliothek, Danzig.
DENMARK: Kongelige Danske Videnskabernes Selskab, Copenhagen.
DUTCH GUIANA: Surinaamsche Koloniale Bibliotheek, Paramaribo.
ECUADOR: Ministerio de Relaciones Exteriores, Quito.
EGYPT: Government Publications Office, Printing Department, Bulaq, Cairo.
ESTHONIA: Negotiations to establish an agency now pending.
FAR EASTERN REPUBLIC: Teachers' College of the Far Eastern Republic, Vladivostok.
FINLAND: Delegation of the Scientific Societies of Finland, Helsingfors.

FRANCE: Service Français des Échanges Internationaux, 110 Rue de Grenelle, Paris.
GERMANY: Amerika-Institut, Universitätstrasse 8, Berlin, N. W. 7.
GREAT BRITAIN AND IRELAND: Messrs. Wheldon & Wesley, 2, 3, and 4 Arthur St., New Oxford St., London, W. C. 2.
GREECE: Bibliothèque Nationale, Athens.
GREENLAND, *via* Denmark.
GUADELOUPE, *via* France.
GUATEMALA: Instituto Nacional de Varones, Guatemala.
GUINEA, *via* Portugal.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
HONDURAS: Biblioteca Nacional, Tegucigalpa.
HUNGARY: Dr. Julius Pikler, Fővárosi Telekértéknyilvántartó Hivatal (City Land Valuation Office), Központi Városház, Budapest III.
ICELAND, *via* Denmark.
INDIA: Superintendent of Stationery, Bombay.
ITALY: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio Emanuele, Rome.
JAMAICA: Institute of Jamaica, Kingston.
JAPAN: Imperial Library of Japan, Tokyo.
JAVA, *via* Netherlands.
LATVIA: Ministry of Foreign Affairs, Riga.
LIBERIA: Bureau of Exchanges, Department of State, Monrovia.
LITHUANIA: Sent by mail.
LOURENÇO MARQUEZ: Government Library, Lourenço Marquez.
LUXEMBURG, *via* Germany.
MADAGASCAR, *via* France.
MADEIRA, *via* Portugal.
MOZAMBIQUE, *via* Portugal.
NETHERLANDS: Bureau Scientifique Central Néerlandais, Bibliothèque de l'Académie technique, Delft.
NEW GUINEA, *via* Netherlands.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: Dominion Museum, Wellington.
NICARAGUA: Ministerio de Relaciones Exteriores, Managua.
NORWAY: Kongelige Norske Frederiks Universitet Bibliotheket, Christiania.
PANAMA: Secretaria de Relaciones Exteriores, Panama.
PARAGUAY: Servicio de Canje Internacional de Publicaciones, Sección Consular y de Comercio, Ministerio de Relaciones Exteriores, Asuncion.
PERU: Oficina de Reparto, Depósito y Canje Internacional de Publicaciones, Ministerio de Fomento, Lima.
POLAND: Bibliothèque du Ministère des Affaires Etrangères, Warsaw.
PORTUGAL: Secção de Trocas Internacionaes, Bibliotheca Nacional, Libson.
QUEENSLAND: Bureau of Exchanges of International Publications, Chief Secretary's Office, Brisbane.
RUMANIA: Institutul Meteorologic Central, Ministerul Agriculturei, Bukharest.
RUSSIA: Shipments temporarily suspended.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SIAM: Department of Foreign Affairs, Bangkok.
SOUTH AUSTRALIA: Public Library of South Australia, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SUMATRA, *via* Netherlands.
SWEDEN: Kongliga Svenska Vetenskaps Akademien, Stockholm.

VITZERLAND: Service des Échanges Internationaux, Bibliothèque Fédérale Centrale, Berne.
RIA: American University of Beirut.
ASMANIA: Secretary to the Premier, Hobart.
RINIDAD: Royal Victoria Institute of Trinidad and Tobago, Port-of-Spain.
UNIS, via France.
URKEY: Shipments temporarily suspended.
'KRAINIA: Negotiations to establish an agency now pending.
'NION OF SOUTH AFRICA: Government Printing Works, Pretoria, Transvaal.
'RUGUAY: Oficina de Canje Internacional, Montevideo.
'ENEZUELA: Biblioteca Nacional, Caracas.
'ICTORIA: Public Library of Victoria, Melbourne.
'ESTERN AUSTRALIA: Public Library of Western Australia, Perth.
'UGOSLAVIA: Académie Royal Serbe des Sciences et des Arts, Belgrade.

RULES GOVERNING THE TRANSMISSION OF EXCHANGES.

A revised edition of the circular containing a brief description of he service and the rules under which packages are accepted for disribution, was published at the close of the year and is here reproluced for the information of any who may desire to make use 'f the service in the forwarding of publications.

In effecting the distribution of its first publications abroad, the Smithonian Institution established relations with many foreign scientific societies nd libraries, by means of which it was enabled to materially assist institutions and individuals of this country in the transmission of their publications broad, and also foreign societies and individuals in distributing their publiations in the United States.

In more recent years the Smithsonian Institution has been charged with the luty of conducting the official exchange bureau of the United States Govrnment, through which the publications authorized by Congress are exhanged for those of other Governments; and by a formal treaty it acts as ntermediary between the learned bodies and scientific and literary societies 'f this and other countries for the reception and transmission of their publications.

Attention is called to the fact that this is an international and not a lomestic exchange service, and that it is designed to facilitate exchanges beween the United States and other countries only. As publications from lomestic sources for addresses in Hawaii, the Philippine Islands, Porto Rico, nd other territory subject to the jurisdiction of the United States do not ome within the designation "international," they are not accepted by the nstitution for transmission through the service.

Packages prepared in accordance with the rules enumerated below will e received by the Smithsonian Institution from individuals or institutions 'f learning in the United States and forwarded to their destinations abroad hrough the various exchange bureaus or agencies in other countries. Many 'f these bureaus and agencies will likewise receive from correspondents in heir countries such publications for addresses in the United States and its lependencies as may be delivered to them under rules similar to those prescribed herein, and will forward them to Washington, after which the Institution will transmit them to their destinations by mail free of cost to the recipients.

On the receipt of a consignment from a domestic source it is assigned a "record number," which number is, for identification purposes, placed on each package contained therein. After the packages have been recorded they are packed in boxes with consignments from other senders and are forwarded by freight to the bureaus or agencies abroad which have undertaken to distribute exchanges in those countries. To Great Britain and Germany shipments are made weekly, to France and Italy semimonthly, and to all other countries consignments are forwarded at intervals not exceeding one month.

The Institution assumes no responsibility in the transmission of packages intrusted to its care, but at all times uses its best endeavors to forward exchanges to their destinations safely and as promptly as possible. Especial attention should be called in this connection to the time ordinarily required for packages sent through the exchange service to reach their destinations. To Great Britain and Germany, for example, where weekly shipments are made, the average time for a package to reach its destination is about six weeks. In some instances the period is much shorter and in no case should it be longer unless there is some unavoidable delay at the ports of embarkation or debarkation. To those countries to which shipments are made at semimonthly and monthly intervals, the time of delivery is of course somewhat longer, depending on the distance and also whether packages are received at the Institution immediately before or after a shipment. If, therefore, advance notices are mailed by senders, mention should be made of the above facts in order that consignees may expect some delay between the receipt of notices and the arrival of packages. In cases where greater dispatch is desired, publications should be forwarded by the senders to their foreign destinations direct by mail.

RULES.

The rules governing the Smithsonian International Exchange Service are as follows:

1. Consignments from correspondents in the United States containing packages for transmission abroad should be addressed—"Smithsonian Institution. International Exchanges, Washington, D. C.," and forwarded with carriage charges to Washington prepaid.

2. In forwarding a consignment the sender should mail a letter to the Institution, stating by what route it is being shipped, and the number of boxes or parcels which it comprises. A list giving the name and address of each consignee should also be furnished. This request should invariably be complied with for record.

3. Packages should be legibly and fully addressed, using, when practicable, the language of the country to which they are to be forwarded. In order to avoid any possible dispute as to ownership, names of individuals should be omitted from packages intended for societies and other establishments.

4. Packages should be securely wrapped and cardboard used if necessary to protect plates from crumpling.

5. Letters are not permitted in exchange packages.

6. If donors desire acknowledgments, packages may contain receipt forms to be signed and returned by the establishment or individual addressed. Should publications be desired in exchange, a request to that effect may be printed on the receipt form or on the package.

7. The work carried on by the International Exchange Service is not in any sense of a commercial nature, but is restricted to the transmission of pub-

cations sent as exchanges or donations. Books sold or ordered through ıe trade are, therefore, necessarily excluded.

8. Specimens are not accepted for distribution, except when permission has ≈en obtained from the Institution.

Respectfully submitted.

C. G. ABBOT,
Assistant Secretary,
In Charge of Library and Exchanges.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 6.

REPORT ON THE NATIONAL ZOOLOGICAL PARK.

SIR: I have the honor to present the following report on the operations of the National Zoological Park for the fiscal year ending June 30, 1922:

The appropriation allowed by Congress in the sundry civil act approved March 4, 1921, for the regular maintenance of the park was the same as for the preceding year, $125,000, with the usual additional allotment of $200 for printing and binding. The sum of $2,500, together with an unobligated balance of $2,403.66 left from the appropriation for alteration of boundaries, 1921, was also made available, as a continuing appropriation, for the purchase of land to correct the eastern boundary line near the Adams Mill Road entrance.

The year has been one of the most successful in the history of the park. A number of minor permanent improvements have been completed, progress has been made on some larger undertakings, and the grounds have been maintained in a condition gratifying to all who are interested in the great natural beauty of the reservation. At the close of the year the collection is larger, and of more importance, than ever before; more different species are on exhibition, and the actual number of animals is greater than in any previous year; there are more than the usual number of rare and valuable specimens; the births have been numerous; and the death rate has been kept at a low mark. For the third successive year the attendance has exceeded 2,000,000.

ACCESSIONS.

Gifts.—No less than 217 animals, an unusual number, were added to the collection as gifts, or were placed by friends of the park on indefinite deposit. Special mention in this connection should be made of two important collections from South America.

The collections of living animals made by Dr. William M. Mann on the Mulford Biological Exploration of the Amazon Basin reached the park on April 15, 1922. Included were 15 mammals, 50 birds, and 17 reptiles that arrived in perfect condition, and a very few others lost from the effects of travel. These were all generously presented to the park by the H. K. Mulford Co., of Philadelphia.

Doctor Mann is to be congratulated on his success in bringing to the country live representatives of several species from Bolivia and western Brazil that have never before been shown. The red-faced spider monkey, black-headed woolly monkey, pale capuchin, choliba screech owl, Bolivian penelope, short-tailed parrot, Maximilian's parrot, blue-headed parrot, Cassin's macaw, golden-crowned paroquet, Weddell's paroquet, orange-winged paroquet, and golden-winged paroquet are new to the collection. These and other rarities are mostly from the Rio Beni, Bolivia, and the upper Rio Madeira, Brazil, localities from which animals seldom find their way into collections. Other species, including such rare birds as the festive parrot, Amazonian caique, and white-backed trumpeter, while not new to the park records, are unusual. There were also some showy birds and small mammals from the lower Amazon as well as an excellent collection of living reptiles. On account of the great proportion of rare species it contained and the unusually good condition of the specimens on arrival, the Mulford Explorations collection easily ranks as the most important accession received from tropical America in some years.

Mr. W. J. La Varre, jr., continuing his donations from personal exploration of out-of-the-way parts of South America, presented 28 birds and mammals from the interior of British Guiana. Conspicuous among these are a cock of the rock, a Hahn's macaw, and two dusky parrots, all new to the collection. Mr. La Varre also succeeded in landing a young red howler monkey. The cock of the rock, a young bird in immature plumage on arrival, has now developed into full color and is one of the most showy and attractive exhibits in the bird house.

Mr. Victor J. Evans, of Washington, D. C., long a regular contributor to the collection, purchased and placed on indefinite deposit a Cape great-eared fox and two yellow-billed hornbills, both species new to the records of the park. The long-eared fox, received from South Africa, is doubtless the first representative of its species ever exhibited alive in America.

Sixty-eight individual donors contributed to the collection during the year. The complete list is as follows:

Mrs. Benjamin E. Abbott, Washington, D. C., Virginia opossum.
Dr. Arthur A. Allen, Ithaca, N. Y., 10 greater scaup ducks.
American Express Co., Washington, D. C., 4 chipmunks.
Mrs. R. P. Andrews, Washington, D. C., Cuban parrot.
Mr. Carl Bandrexler, Washington, D. C., copperhead.
Mr. Murrell Barkley, Washington, D. C., 2 tovi paroquets.
Mrs. A. H. Baum, Washington, D. C., alligator.
Mrs. William R. Bedell, Washington, D. C., blue-fronted parrot.
Mr. John M. Blanton, Washington, D. C., Texas red wolf.
Mrs. Grace Boone, New Midway, Md., American coot.

Mr. M. G. Butler, Dillwyn, Va., great horned owl.

Mr. Thomas F. Callahan, Washington, D. C., great horned owl.

Canadian Government, through Hon. J. B. Harkin, yak.

Mr. Madison Clark, Washington, D. C., great horned owl.

Mrs. John L. Clem, Washington, D. C., zebra finch.

Mr. M. Cochrane, La Plata, Md., American barn owl.

Mr. N. B. Davis, Washington, D. C., alligator.

Mr. Harrison H. Dodge, Mount Vernon, Va., red and blue and yellow macaw.

Miss Josephine Duffey, Alexandria, Va., crab-eating macaque.

Mr. J. H. Evans, Washington, D. C., skunk.

Mr. Victor J. Evans, Washington, D. C., great-eared fox and two yellow-billed hornbills.

Commander Frank Jack Fletcher, United States Navy, Washington, D. C., grass paroquet.

Mrs. Kenneth L. Frye, Chevy Chase, Md., sulphur-crested cockatoo.

Mr. H. C. Fuller, Washington, D. C., brown capuchin.

Mrs. E. W. Gibb, Washington, D. C., raccoon.

Gude Bros. Co., Washington, D. C., alligator.

Miss Emma T. Hahn, Washington, D. C., 4 canaries.

Hon. Warren G. Harding, White House, Washington, D. C., coyote.

Mr. Mitchell Harrison, Nokesville, Va., raccoon.

Mr. Caleb R. Hathaway, Chevy Chase, Md., Virginia opossum.

Mr. Odis B. Hinnant, Washington, D. C., banded rattlesnake.

Mr. Allen Hoover, Washington, D. C., two alligators.

Mr. M. A. Horner, Seward, Alaska, Alaskan bald eagle.

Mr. S. F. Howland, Silver Springs, Md., barred owl.

Kazim Temple, A. A. O. N. M. S., Roanoke, Va., bald eagle.

Mr. R. A. Kishpaugh, Fredericksburg, Va., two alligators.

Mr. S. Seibert Knode, Boonsboro, Md., red-tailed hawk and two American barn owls.

Mr. W. J. La Varre, jr., Washington, D. C., red howler monkey, cock of the rock, Hahn's macaw, 2 dusky parrots, 3 orange-winged parrots, and 20 blue-winged parrotlets.

Mr. Harry L. Light, Washington, D. C., festive parrot.

Mr. Edward Lucas, Silver Springs, Md., jumping mouse.

Dr. C. L. Marlatt, Washington, D. C., yellow-headed parrot.

Dr. C. B. Masson, Washington, D. C., one black snake and five copperheads.

Mr. Richard McCann, Washington, D. C., woodchuck.

Mr. Edward B. McLean, Washington, D. C., kinkajou and brown pelican.

Miss Sara G. Meetze, Washington, D. C., red fox.

Mrs. Charles Middleton, Silver Hill, Md., bald eagle.

Mulford Biological Exploration of the Amazon Basin, through Dr. William M. Mann, red-faced spider monkey, douroucouli, titi monkey, 2 woolly monkeys, 2 pale capuchins, 2 agoutis, 6 tamarins, toucan, choliba screech owl, guan, penelope, 2 razor-billed curassows, 2 white-backed trumpeters, short-tailed parrot, Maximilian's parrot, mealy parrot, 3 blue-headed parrots, 4 festive parrots, Cassin's macaw, white-eyed paroquet, 4 golden-crowned paroquets, 4 Weddell's paroquets, 7 orange-winged paroquets, 8 golden-winged paroquets, 7 Amazonian caiques, spectacled caayman, and 16 South American turtles.

Mr. C. Bland Payne, Richmond, Va., sparrow hawk.

Miss Dorothy Pickells, Washington, D. C., brown capuchin.

Mr. Marshall Pickett, Brentwood, Md., screech owl.

Mr. Jack Polkinhorn, Washington, D. C., painted turtle.

Mr. J. S. Ritz, Altoona, Pa., two sparrow hawks.

mander John David Robnett, United States Navy, Washington, D. C., anto Domingo parrots.
Richard J. Scharf, Washington, D. C., two alligators.
Edward S. Schmid, Washington, D. C., jackdaw, Canadian porcupine, and irginia opossums.
. Harry Seamon, Takoma Park, Md., barred owl.
s. Albert Semler, Hagerstown, Md., two American barn owls.
R. W. Shufeldt, Washington, D. C., glass-snake.
. Robert Stabler, Washington, D. C., black snake.
te Game, Fish and Forest Fire Department, Lansing, Mich., through John Baird, four coyotes.
s. Anna P. Stewart, Chevy Chase, Md., two canaries.
s. Lucy N. Towson, Washington, D. C., canary.
. J. E. Tyler, Washington, D. C., three moccasins.
. Edward White, Washington, D. C., albino squirrel.
n. Arthur H. Wight, Port of Spain, Trinidad, British West Indies, capybara.
. J. Warren Wood, Silver Springs, Md., weasel.
s. Lena D. Woodard, South Washington, Va., barred owl.
. L. T. Zbinden, Washington, D. C., yellow-headed parrot.

irths.—During the year 58 mammals and 28 reptiles were born, 64 birds were hatched in the park. These records include only as are reared to a reasonable age, no account being made in e published statistics of young that live only a few days. Mam- s born include: Manchurian tiger, 4; dingo, 6; Florida otter, 3; oon, 2; gray wolf, 1; hippopotamus, 1; Rocky Mountain sheep, 1; , 1; East African eland, 1; American bison, 1; llama, 1; Indian lope, 1; Virginia deer, 3; hog deer, 2; Japanese deer, 5; fallow , 2; red deer, 5; barasingha, 1; brush-tailed rock wallaby, 2; us-bellied wallaby, 3; black-tailed wallaby, 1; great red kanga- 5; wallaroo, 1; Trinidad agouti, 2; rhesus monkey, 2; green ion, 1. Reptiles: Ground rattlesnake, 1; copperhead, 27. Birds hed were of the following species: Greater snow goose, Canada e, wood duck, pintail, black duck, mallard, American coot, black- ned night heron, peafowl, ring-necked pheasant, and European d pigeon.

he young Manchurian tigers were born August 19, 1921, and at close of the year were fine, thrifty animals, of good growth. The opotamus, born April 27, 1922, is the third young successfully ed in the gardens from the same pair of animals. The success earing a young mountain sheep ram last year makes it seem able that the lamb born this spring will also develop into a ect animal.

xchanges.—A number of valuable animals were received in ex- ge for surplus stock. The accessions include 19 mammals, 166 s, and 8 reptiles. Special mention should be made of a panda, e yellow-footed rock wallabies, an aard-wolf, and a Hagenbeck's gabey, none of which have before been on exhibition in the

gardens. The panda is the only Old World representative of the raccoon family and is an animal of striking appearance. It comes from the high Himalaya Mountains of northern India. The aard-wolf of South Africa has probably never before been shown alive in America. It is related to the hyenas but is chiefly insectivorous in its habits and lacks the powerful dental equipment of most of the carnivores. Other mammals received in exchange are a lioness, aoudad, great anteater, cape bushbuck, sable antelope, two Malay tapirs, a wombat, brown woolly monkey, anubis baboon, vervet guenon, and two Japanese monkeys.

Among the birds received in exchange special mention should be made of the following species: Hawaiian goose, bean goose, European pochard, tufted duck, European lapwing, greater vasa parrot, and African black vulture.

A regal python, 25 feet long, was received in exchange. This is the largest snake ever exhibited in the park.

Purchases.—A brindled gnu from South Africa, and a young male American elk, were purchased during the year. In addition to these a few small common mammals and birds were purchased at low cost.

Transfers.—An especially fine collection of ostriches, 12 birds in all, were transferred to the park from the United States poultry experiment station, Bureau of Animal Industry, Glendale, Ariz. The lot includes selected representatives of the Somaliland, Nubian, and South African species, and comprises probably the finest show of ostriches in America.

Through the Biological Survey, Department of Agriculture, were received a number of animals collected by field agents of the bureau. These include a badger from Mr. R. E. Bateman, Billings, Mont.; 2 gray wolves from Mr. Charles J. Bayer, Cheyenne, Wyo.; 7 beavers from Mr. Vernon Bailey, chief field naturalist; a wood duck and a cardinal from Mr. George A. Lawyer, chief game warden; a desert tortoise from Mr. M. E. Musgrave, Phoenix, Ariz.; and 12 Florida gopher tortoises from the survey laboratories.

The Bureau of Fisheries, Department of Commerce, contributed 5 specimens of the snapping turtle.

REMOVALS.

Surplus animals to the number of 44 were sent away during the year in exchange for other stock. Among these were the following mammals that had been born and reared in the park: Indian water buffalo, 1; American bison, 1; Rocky Mountain sheep, 1; Indian antelope, 1; llama, 2; guanaco, 1; red deer, 7; Japanese deer, 3;

arasingha, 1; dingo, 2; gray wolf, 1; European brown bear, 4; red angaroo, 2; and rufous-bellied wallaby, 2.

A number of animals on deposit were returned to owners.

While the death rate has been kept low for the collection as a vhole, there have been some serious losses of animals long in the ark. The records of some of these, interesting because of longevty in captivity, are as follows: A black vulture (*Coragyps urubu*) eceived as a bird of the year November 26, 1900, was killed by its age mate, a bird of the same species, December 28, 1921, 21 years, 1 month, and 2 days after arrival. A female South American apir, received from Demerara August 28, 1901, then about 4 years of age, died September 7, 1921, after 20 years and 10 days of life in the National Zoological Park. Nine young were born to this animal during this period, seven of which were reared. The immediate cause of death was tuberculosis. A male gray wolf (*Canis nubilus*), born in the park March 29, 1905, died at an age of 16 years, 3 months, and 5 days, on July 4, 1921. A male llama, born in the park April 28, 1907, died of pyemia at an age of 14 years, 10 months, and 7 days, on March 7, 1922. A female California sea lion received May 25, 1907, died 14 years, 2 months, and 5 days after arrival on July 30, 1921. A cariama (*Cariama cristata*) received from Dr. Clemente Onelli, director of the Municipal Zoological Gardens, Buenos Aires, March 14, 1908, died 13 years, 4 months, and 1 day later, on July 15, 1921. A grizzly bear, male, received from the Yellowstone National Park July 29, 1908, died March 27, 1922. This bear was about 3½ years old on arrival, lived in the park 13 years, 7 months, and 28 days, and its death was clearly due to advanced age. The female harbor seal (*Phoca vitulina*), received January 19, 1910, died of enteritis on March 9, 1922, after 12 years, 1 month, and 18 days of life in the park. A female wart hog, presented by Mr. W. N. McMillan, which reached the park December 19, 1909, died July 29, 1921, 11 years, 7 months, and 10 days after arrival. A female kinkajou (*Potos flavus*), received from Panama June 17, 1910, died after 11 years, 1 month, and 5 days of life in the park, on July 22, 1921. A female Woodhouse's wolf (*Canis frustror*), born in the park April 17, 1911, died January 7, 1922, at an age of 10 years, 8 months, and 21 days. A female gray coatimundi (*Nasua narica*) received April 2, 1913, died February 22, 1922, after 8 years, 10 months, and 20 days in the park. The European badger (*Meles meles*) received from the London Zoological Gardens May 1, 1915, died 6 years, 6 months, and 11 days later, on November 12, 1921.

Other serious losses include the Florida manatee from septic peritonitis, July 16, 1921; Mongolian wild horse (*Equus przewal-*

skii) from inflammation of bladder, November 27, 1921; an Arabian camel, hemorrhagic cystitis, April 3, 1922; a female Rocky Mountain sheep from metroperitonitis, June 6, 1922; two Count Raggi's birds of paradise, enteritis, February 7 and 9, 1922; and the last trumpeter swan, the property of Mr. R. M. Barnes, Lacon, Ill. which had been on deposit since April 15, 1917. The swan died of tuberculosis of the liver on June 14, 1922.

Post-mortem examinations were made, in most cases, by the pathological division of the Bureau of Animal Industry. Two examinations were made by Dr. Adolph H. Schultz, of the Carnegie Institution, Laboratory of Embryology, and one by Dr. C. W. Stiles at the Hygienic Laboratory, Bureau of Public Health Service. The following list shows the results of autopsies, the cases being arranged by groups:

CAUSES OF DEATH.

MAMMALS.

Marsupialia: Congestion of lungs, 1; pleurisy and pneumonia, 1; enteritis, 2; septicemia, 1; accident, 1; old age, 1.

Carnivora: Pneumonia, 1; tuberculosis, 2; enteritis, 1; gastroenteritis, 3; old age, 1; no cause found, 1.

Rodentia: Tuberculosis, 1; septic pleuropneumonia, 1; enteritis, 2.

Primates: Bronchopneumonia, 1; tuberculosis, 1; enteritis, 1; gastroenteritis, 1; colitis, 2; parasitic peritonitis, 2.

Artiodactyla: Pneumonia, 1; verminous bronchopneumonia, 2; pleurisy, 1; tuberculosis, 1; enteritis, 1; metroperitonitis, 1; hemorrhagic cystitis, 1; pyemia, 1; anemia, 1; accident, 1; no cause found, 1.

Perissodactyla: Tuberculosis, 1; prolapse of rectum, 1.

Sirenia: Peritonitis, 1.

BIRDS.

Ratitæ: Pleurisy and peritonitis, 1.

Ciconiiformes: Aspergillosis, 1; enteritis, 1; anemia, 3; no cause found, 5.

Anseriformes: Tuberculosis, 6; aspergillosis, 1; enteritis, 1; abscess of intestine, 1; no cause found, 4.

Falconiformes: Anemia, 1; no cause found, 1.

Galliformes: Enteritis, 4; anemia, 1.

Gruiformes: No cause found, 1.

Charadriiformes: Pneumonia, 2; aspergillosis, 1; no cause found, 2.

Coraciiformes: No cause found, 1.

Passeriformes: Aspergillosis, 1; enteritis, 4; abscess of lung, 1.

REPTILES.

Serpentes: No cause found, 1.

A total of 68 specimens—26 mammals, 25 birds, and 17 reptiles—of special scientific importance, were transferred after death to the United States National Museum. Four dead mammals were de-

)r scientific investigations to the Carnegie Laboratory of)gy, Johns Hopkins Medical School, Baltimore; two to :ican Museum of Natural History, New York City; and e Hygienic Laboratory, Public Health Service, Washing-'. Four skins of birds were added to the reference collec- dealers' cage birds" in the office of the National Zoological

ANIMALS IN THE COLLECTION JUNE 30, 1922.

MAMMALS.

MARSUPIALIA.

ossum (*Didelphis virgini-*	4
devil (*Sarcophilus harri-*	1
)possum (*Trichosurus vul-*	2
nger (*Petaurus breviceps*)	8
rock wallaby (*Petrogale*)	3
d rock wallaby (*Petrogale*)	3
:d wallaby (*Macropus bil-*	7
wallaby (*Macropus bi-*	3
kangaroo (*Macropus mela-*	2
facropus robustus)	2
)o (*Macropus rufus*)	11
hascolomys mitchelli)	1

CARNIVORA.

· (*Ursus middendorffi*)	2
nsula bear (*Ursus gyas*)	2
r (*Ursus dalli*)	1
r (*Ursus kidderi*)	2
ear (*Ursus arctos*)	2
(*Ursus horribilis*)	1
zly (*Ursus apache*)	1
)ear (*Ursus thibetanus*)	1
(*Ursus americanus*)	1
ear (*Ursus americanus cin-*)	2
· (*Ursus floridanus*)	1
(*Ursus emmonsii*)	1
Helarctos malayanus*)	1
(*Melursus ursinus*)	1
(*Thalarctos maritimus*)	2
le *dingo*)	3
(*Canis familiaris*)	2
Canis nubilus)	9
)lf (*Canis floridanus*)	1
ı wolf (*Canis frustror*)	1
/olf (*Canis rufus*)	1

CARNIVORA—continued.

Coyote (*Canis latrans*)	4
Plains coyote (*Canis nebracensis*)	1
Red fox (*Vulpes fulva*)	6
Great-eared fox (*Otocyon megalotis*)	1
Gray fox (*Urocyon cinereoargenteus*)	4
Cacomistle (*Bassariscus astutus*)	1
Panda (*Ailurus fulgens*)	1
Raccoon (*Procyon lotor*)	18
Gray coatimundi (*Nasua narica*)	1
Kinkajou (*Potos flavus*)	2
Mexican kinkajou (*Potos flavus azte-cus*)	1
Weasel (*Mustela noveboracensis*)	1
Tayra (*Tayra barbara*)	1
Skunk (*Mephitis nigra*)	2
Florida otter (*Lutra canadensis vaga*)	3
Palm civet (*Paradoxurus hermaphro-ditus*)	2
Wahlberg's mongoose (*Helogale par-vula*)	1
Aard-wolf (*Proteles cristatus*)	1
Spotted hyena (*Crocuta crocuta*)	1
Striped hyena (*Hyæna hyæna*)	1
African cheetah (*Acinonyx jubatus*)	2
Lion (*Felis leo*)	3
Bengal tiger (*Felis tigris*)	1
Manchurian tiger (*Felis tigris longi-pilis*)	6
Leopard (*Felis pardus*)	1
East African leopard (*Felis pardus suahelica*)	1
Jaguar (*Felis onca*)	1
Brazilian ocelot (*Felis pardalis brasili-ensis*)	1
Snow leopard (*Felis uncia*)	1
Mexican puma (*Felis azteca*)	2
Mountain lion (*Felis hippolestes*)	3
Canada lynx (*Lynx canadensis*)	1
Northern wild cat (*Lynx uinta*)	3
Bay lynx (*Lynx rufus*)	2

PINNIPEDIA.

California sea-lion (*Zalophus californianus*)	1

ANIMALS IN THE COLLECTION JUNE 30, 1922—Continued.

MAMMALS—continued.

RODENTIA.

Woodchuck (*Marmota monax*)	2
Dusky marmot (*Marmota flaviventris obscura*)	1
Prairie-dog (*Cynomys ludovicianus*)	5
White-tailed prairie dog (*Cynomys gunnisoni*)	1
Antelope squirrel (*Ammospermophilus leucurus*)	1
Arizona antelope squirrel (*Ammospermophilus harrisii*)	1
Chipmunk (*Eutamias neglectus*)	3
Albino squirrel (*Sciurus carolinensis*)	3
Baird's pocket mouse (*Perognathus flavus*)	1
Bailey's pocket mouse (*Perognathus baileyi*)	2
Jumping mouse (*Zapus hudsonius*)	1
Montana white-footed mouse (*Peromyscus leucopus aridulus*)	1
Nebraska white-footed mouse (*Peromyscus maniculatus osgoodi*)	2
African porcupine (*Hystrix africaeaustralis*)	1
Malay porcupine (*Acanthion brachyurum*)	2
Coypu (*Myocastor coypus*)	3
Central American paca (*Cuniculus paca virgatus*)	1
Mexican agouti (*Dasyprocta mexicana*)	1
Sooty agouti (*Dasyprocta fuliginosa*)	1
Speckled agouti (*Dasyprocta punctata*)	2
Panama agouti (*Dasyprocta punctata isthmica*)	1
Azara's agouti (*Dasyprocta azarae*)	2
Trinidad agouti (*Dasyprocta rubrata*)	4
Crested agouti (*Dasyprocta cristata*)	2
Yellow-rumped agouti (*Dasyprocta lucifer cayennae*)	1
Peruvian guinea pig (*Cavia tschudii pallidor*)	1
Guinea pig (*Cavia porcellus*)	8
Capybara (*Hydrochaerus hydrochaeris*)	1

LAGOMORPHA.

Domestic rabbit (*Oryctolagus cuniculus*)	18

EDENTATA.

Great anteater (*Myrmecophaga tridactyla*)	1

PRIMATES.

Red-faced spider monkey (*Ateles paniscus*)	1
Feline douroucouli (*Aotus infulatus*)	1
Brown woolly monkey (*Lagothrix infumata*)	1
Black-headed woolly monkey (*Lagothrix ubericola*)	1

PRIMATES—continued.

White-throated capuchin (*Cebus capucinus*)	4
Pale capuchin (*Cebus unicolor*)	2
Brown capuchin (*Cebus fatuellus*)	3
Azara's capuchin (*Cebus azarae*)	1
Titi monkey (*Saimiri sciureus*)	1
Negro tamarin (*Cercopithecus ursulus*)	1
Chacma (*Papio porcarius*)	1
Anubis baboon (*Papio cynocephalus*)	1
Hamadryas baboon (*Papio hamadryas*)	1
East African baboon (*Papio ibeanus*)	1
Mandrill (*Papio sphinx*)	1
Drill (*Papio leucophaeus*)	1
Moor macaque (*Cynopithecus maurus*)	1
Barbary ape (*Simia sylvanus*)	2
Brown macaque (*Macaca speciosa*)	1
Japanese macaque (*Macaca fuscata*)	2
Pig-tailed monkey (*Macaca nemestrina*)	1
Burmese macaque (*Macaca andamanensis*)	1
Rhesus monkey (*Macaca rhesus*)	28
Bonnet monkey (*Macaca sinica*)	1
Crab-eating macaque (*Macaca irus*)	1
Javan macaque (*Macaca mordax*)	4
Black mangabey (*Cercocebus atterrimus*)	1
Sooty mangabey (*Cercocebus fuliginosus*)	2
Hagenbeck's mangabey (*Cercocebus hagenbecki*)	1
White-collared mangabey (*Cercocebus torquatus*)	1
Green guenon (*Lasiopyga callitrichus*)	3
Vervet guenon (*Lasiopyga pygerythra*)	2
Mona (*Lasiopyga mona*)	4
Roloway guenon (*Lasiopyga roloway*)	1
Patas monkey (*Erythrocebus patas*)	1
Chimpanzee (*Pan satyrus*)	1
Orang-utan (*Pongo pygmaeus*)	1

ARTIODACTYLA.

Wild boar (*Sus scrofa*)	1
Wart-hog (*Phacochaerus aethiopicus*)	1
Collared peccary (*Pecari angulatus*)	1
Hippopotamus (*Hippopotamus amphibius*)	3
Bactrian camel (*Camelus bactrianus*)	2
Arabian camel (*Camelus dromedarius*)	1
Guanaco (*Lama guanicoe*)	3
Llama (*Lama glama*)	5
Alpaca (*Lama pacos*)	1
Fallow deer (*Dama dama*)	7
Axis deer (*Axis axis*)	3
Hog deer (*Hyelaphus porcinus*)	8
Sambar (*Rusa unicolor*)	2
Barasingha (*Rucervus duvaucelli*)	9
Burmese deer (*Rucervus eldii*)	1
Japanese deer (*Sika nippon*)	13
Red deer (*Cervus elaphus*)	12

NIMALS IN THE COLLECTION JUNE 30, 1922—Continued.

MAMMALS—continued.

ARTIODACTYLA—continued.

deer (*Cervus hanglu*)	2
leer (*Cervus xanthopygus*)	6
elk (*Cervus canadensis*)	5
deer (*Odocoileus virginianus*)	10
leer (*Odocoileus chiriquensis*)	1
r (*Odocoileus hemionus*)	2
led deer (*Odocoilcus colum-*)	1
brocket (*Mazama simplicicor-*	1
(*Damaliscus albifrons*)	2
led gnu (*Connochætes gnou*)	1
gnu (*Connochætes taurinus*)	1
Onotragus leche)	1
elope (*Egocerus niger*)	1
itelope (*Antilope cervicapra*)	4
loselaphus tragocamelus)	2
ican eland (*Taurotragus oryx* ‘onii)	3
ihbuck (*Tragelaphus sylvati-*	1
:mitragus jemlahicus)	4
goat (*Oreamnos americanus*)	3
Ammotragus lervia)	2

ARTIODACTYLA—continued.

Rocky Mountain sheep (*Ovis canadensis*)	5
Arizona mountain sheep (*Ovis canadensis gaillardi*)	1
Barbados sheep (*Ovis aries*)	2
Zebu (*Bos indicus*)	1
Yak (*Poëphagus grunniens*)	5
American bison (*Bison bison*)	13
Indian buffalo (*Bubalus bubalis*)	2

PERISSODACTYLA.

Malay tapir (*Tapirus indicus*)	1
Brazilian tapir (*Tapirus terrestris*)	1
Grant's zebra (*Equus quagga granti*)	1
Grevy's zebra (*Equus grevyi*)	1
Zebra-horse hybrid (*Equus grevyi-caballus*)	1
Zebra-ass hybrid (*Equus grevyi-asinus*)	1

PROBOSCIDEA.

Abyssinian elephant (*Loxodonta africana oxyotis*)	1
Sumatran elephant (*Elephas sumatranus*)	2

BIRDS.

RATITÆ.

rican ostrich (*Struthio aus-*	6
d ostrich (*Struthio molybdo-*)	2
strich (*Struthio camelus*)	5
ea americana)	2
cassowary (*Casuarius phi-*	1
omæus novæhollandiæ)	2

CICONIIFORMES.

white pelican (*Pelecanus rhynchos*)	7
white pelican (*Pelecanus alus*)	2
elican (*Pelecanus roseus*)	2
a pelican (*Pelecanus con-tus*)	2
elican (*Pelecanus occiden-*	10
a cormorant (*Phalacrocorax floridanus*)	5
ite heron (*Ardea occiden-*	2
eron (*Ardea goliath*)	1
egret (*Casmerodius egretta*)	3
ret (*Egretta candidissima*)	3
rned night heron (*Nycticorax ax nævius*)	33
Cochlearius cochlearius)	2
rk (*Ciconia ciconia*)	2
k (*Ciconia nigra*)	1
biru (*Xenorhynchus asiati-*	1

CICONIIFORMES—continued.

Straw-necked ibis (*Carphibis spinicollis*)	1
Sacred ibis (*Threskiornis æthiopicus*)	3
Australian ibis (*Threskiornis strictipennis*)	2
White ibis (*Guara alba*)	12
Scarlet ibis (*Guara rubra*)	4
Roseate spoonbill (*Ajaia ajaja*)	2
European flamingo (*Phœnicopterus roseus*)	1

ANSERIFORMES.

Mallard (*Anas platyrhynchos*)	15
Black duck (*Anas rubripes*)	34
Australian black duck (*Anas superciliosa*)	2
Gadwall (*Chaulelasmus streperus*)	3
European widgeon (*Mareca penelope*)	7
Baldpate (*Mareca americana*)	6
Green-winged teal (*Nettion carolinense*)	15
European teal (*Nettion crecca*)	10
Baikal teal (*Nettion formosum*)	6
Blue-winged teal (*Querquedula discors*)	9
Garganey (*Querquedula querquedula*)	6
Cinnamon teal (*Querquedula cyanoptera*)	1
Shoveller (*Spatula clypeata*)	4
Pintail (*Dafila acuta*)	12
Wood duck (*Aix sponsa*)	18
Mandarin duck (*Dendronessa galericulata*)	14
Canvasback (*Marila valisineria*)	4

ANIMALS IN THE COLLECTION JUNE 30, 1922—Continued.

BIRDS—continued.

ANSERIFORMES—continued.

European pochard (*Marila ferina*)	4
Redhead (*Marila americana*)	9
Ring-necked duck (*Marila collaris*)	1
Tufted duck (*Marila fuligula*)	4
Lesser scaup duck (*Marila affinis*)	5
Greater scaup duck (*Marila marila*)	11
White-eyed duck (*Marila nyroca*)	1
Rosy-billed pochard (*Metopiana peposaca*)	4
Egyptian goose (*Chenalopex ægyptiacus*)	4
Upland goose (*Chloëphaga leucoptera*)	1
Hawaiian goose (*Nesochen sandvicensis*)	2
Snow goose (*Chen hyperboreus*)	2
Greater snow goose (*Chen hyperboreus nivalis*)	7
Blue goose (*Chen cærulescens*)	7
White-fronted goose (*Anser albifrons*)	4
American white-fronted goose (*Anser albifrons gambeli*)	3
Bean goose (*Anser fabalis*)	2
Bar-headed goose (*Eulabeia indica*)	3
Canada goose (*Branta canadensis*)	10
Hutchins's goose (*Branta canadensis hutchinsii*)	8
Cackling goose (*Branta canadensis minima*)	2
Brant (*Branta bernicla glaucogastra*)	13
Barnacle goose (*Branta leucopsis*)	7
Spur-winged goose (*Plectropterus gambensis*)	2
Pied goose (*Anseranas semipalmata*)	2
Black-bellied tree duck (*Dendrocygna autumnalis*)	6
Eyton's tree duck (*Dendrocygna eytoni*)	4
White-faced tree duck (*Dendrocygna viduata*)	2
Mute swan (*Cygnus gibbus*)	2
Whistling swan (*Olor columbianus*)	1
Black swan (*Chenopis atrata*)	2

FALCONIFORMES.

South American condor (*Vultur gryphus*)	1
California condor (*Gymnogyps californianus*)	3
Turkey vulture (*Cathartes aura*)	3
Black vulture (*Coragyps urubu*)	1
King vulture (*Sarcoramphus papa*)	2
Secretary bird (*Sagittarius serpentarius*)	1
Griffon vulture (*Gyps fulvus*)	1
African black vulture (*Torgos tracheliotus*)	1
Cinereous vulture (*Aegypius monachus*)	2
Caracara (*Polyborus cheriway*)	2
Wedge-tailed eagle (*Uroaëtus audax*)	2
Golden eagle (*Aquila chrysaëtos*)	4
White-bellied sea eagle (*Cuncuma leucogaster*)	2

FALCONIFORMES—continued.

Bald eagle (*Haliæetus leucocephalus*)	13
Alaskan bald eagle (*Haliæetus leucocephalus alascanus*)	3
Broad-winged hawk (*Buteo platypterus*)	1
Red-tailed hawk (*Buteo borealis*)	5
Sparrow hawk (*Falco sparverius*)	7

GALLIFORMES.

Razor-billed curassow (*Mitu mitu*)	2
Penelope (*Penelope boliviana*)	1
Guan (*Ortalis albiventris*)	1
Chachalaca (*Ortalis vetula*)	1
Peafowl (*Pavo cristatus*)	34
Peacock pheasant (*Polyplectron bicalcaratum*)	1
Silver pheasant (*Gennæus nycthemerus*)	1
Ring-necked pheasant (*Phasianus torquatus*)	12
Bobwhite (*Colinus virginianus*)	1
Gambel's quail (*Lophortyx gambelii*)	2
Valley quail (*Lophortyx californica vallicola*)	1
Scaled quail (*Callipepla squamata*)	1

GRUIFORMES.

East Indian gallinule (*Porphyrio calvus*)	5
American coot (*Fulica americana*)	5
South Island weka rail (*Ocydromus australis*)	3
Short-winged weka (*Ocydromus brachypterus*)	2
Earl's weka (*Ocydromus earli*)	1
Whooping crane (*Grus americana*)	1
Sandhill crane (*Grus mexicana*)	2
Little brown crane (*Grus canadensis*)	6
White-necked crane (*Grus leucauchen*)	1
Indian white crane (*Grus leucogeranus*)	1
Lilford's crane (*Grus lilfordi*)	2
Sarus crane (*Grus collaris*)	1
Australian crane (*Grus rubicunda*)	2
Demoiselle crane (*Anthropoides virgo*)	4
Crowned crane (*Balearica pavonina*)	1
White-backed trumpeter (*Psophia leucoptera*)	3
Kagu (*Rhynochetos jubatus*)	1

CHARADRIIFORMES.

Lapwing (*Vanellus vanellus*)	3
Yellow-wattled lapwing (*Lobivanellus indicus*)	1
Pacific gull (*Gabianus pacificus*)	2
Great black-backed gull (*Larus marinus*)	1
Herring gull (*Larus argentatus*)	3
Laughing gull (*Larus atricilla*)	2
Australian crested pigeon (*Ocyphaps lophotes*)	5
Bronze-wing pigeon (*Phaps chalcoptera*)	3

:MALS IN THE COLLECTION JUNE 30, 1922—Continued.

BIRDS—continued.

ADRIIFORMES—continued.

:a pigeon (*Leucosarcia pi-*	4
ı (*Columba palumbus*)	9
›ve (*Zenaidura macroura*)	2
ove (*Spilopelia tigrina*)	4
(*Geopelia striata*)	3
:ed dove (*Geopelia humer-*	2
Scardafella inca)	2
nd dove (*Chæmepelia pas-avida*)	1
d dove (*Chalcophaps in-*	2
green dove (*Chalcophaps* ›ra)	5
·tle-dove (*Streptopelia*	1

PSITTACIFORMES.

· *notabilis*)	4
Calopsitta novæhollandiæ)	1
:katoo (*Kakatoe roseica-*	17
cockatoo (*Kakatoe gym-*	3
cockatoo (*Kakatoe lead-*	4
too (*Kakatoe alba*)	2
ted cockatoo (*Kakatoe*	8
rested cockatoo (*Kakatoe is*)	1
caw (*Ara auricollis*)	1
'een macaw (*Ara mexi-*	2
low macaw (*Ara ara-*	2
-and-yellow macaw (*Ara*	8
ıw (*Diopsittaca hahni*)	1
paroquet (*Aratinga leuco-*)	1
ned paroquet (*Eupsittula*	3
aroquet (*Eupsittula wed-*	4
parrotlet (*Psittacula pas-*	11
d paroquet (*Tirica vire-*	1
: (*Brotogeris sithomæ*)	2
quet (*Brotogeris chryso-*	8
t (*Brotogeris jugularis*)	4
ed paroquet (*Brotogeris*	6
l parrot (*Amazona auro-*	3
ed parrot (*Amazona au-*	1
: (*Amazona farinosa*)	1
ed parrot (*Amazona ama-*	4

PSITTTACIFORMES—continued.

Blue-fronted parrot (*Amazona æstiva*)	1
Red-crowned parrot (*Amazona viridigenalis*)	6
Double yellow-head parrot (*Amazona oratrix*)	7
Yellow-headed parrot (*Amazona ochrocephala*)	5
Festive parrot (*Amazona festiva*)	6
Santo Domingo parrot (*Amazona ventralis*)	2
Cuban parrot (*Amazona leucocephala*)	1
Maximilian's parrot (*Pionus maximiliani*)	1
Blue-headed parrot (*Pionus menstruus*)	3
Amazonian caique (*Pionites xanthomeria*)	7
Short-tailed parrot (*Graydidascalus brachyurus*)	1
Lesser vasa parrot (*Coracopsis nigra*)	1
Greater vasa parrot (*Coracopsis vasa*)	1
Pennant's paroquet (*Platycercus elegans*)	1
Rosella paroquet (*Platycercus eximius*)	1
Black-tailed paroquet (*Polytelis melanura*)	2
King paroquet (*Aprosmictus cyanopygius*)	3
Ring-necked paroquet (*Conurus torquatus*)	1
Nepalese paroquet (*Conurus nepalensis*)	1
Grass paroquet (*Melopsittacus undulatus*)	61

CORACIIFORMES.

Giant kingfisher (*Dacelo gigas*)	2
Yellow-billed hornbill (*Lophoceros leucomelas*)	2
Barred owl (*Strix varia*)	7
Snowy owl (*Nyctea nyctea*)	1
Screech owl (*Otus asio*)	3
Choliba screech owl (*Otus choliba*)	1
Great horned owl (*Bubo virginianus*)	13
American barn owl (*Tyto perlata pratincola*)	7
Ariel toucan (*Ramphastos ariel*)	1

PASSERIFORMES.

Cock of the rock (*Rupicola rupicola*)	1
Silver-eared hill-tit (*Mesia argentauris*)	3
Red-billed hill-tit (*Liothrix luteus*)	8
Black-gorgeted laughing-thrush (*Garrulax pectoralis*)	2
White-eared bulbul (*Otocompsa leucotis*)	3
European blackbird (*Turdus merula*)	2
Piping crow-shrike (*Gymnorhina tibicen*)	4
Satin bower-bird (*Ptilonorhynchus violaceus*)	1
European raven (*Corvus corax*)	1

ANIMALS IN THE COLLECTION JUNE 30, 1922—Continued.

BIRDS—continued.

PASSERIFORMES—continued.

Australian crow (*Corvus coronoides*)	1
Jackdaw (*Corvus monedula*)	1
Yucatan jay (*Cissilopha yucatanica*)	1
Blue jay (*Cyanocitta cristata*)	3
Green jay (*Xanthoura luxuosa*)	1
Australian gray jumper (*Struthidea cinerea*)	1
Starling (*Sturnus vulgaris*)	9
Crimson tanager (*Ramphocelus dimidiatus*)	1
Blue tanager (*Thraupis cana*)	2
Pin-tailed whydah (*Vidua principalis*)	1
Paradise whydah (*Steganura paradisea*)	3
Shaft-tailed whydah (*Tetrænura regia*)	2
Napolean weaver (*Pyromelana afra*)	1
Red-billed weaver (*Quelea quelea*)	1
Madagascar weaver (*Foudia madagascariensis*)	3
Fire finch (*Lagonosticta senegala*)	2
Strawberry finch (*Amandava amandava*)	6
Cordon bleu (*Estrilda phœnicotis*)	1
Nutmeg finch (*Munia punctulata*)	6
White-headed nun (*Munia maja*)	4
Black-headed nun (*Munia atricapilla*)	2
Java finch (*Munia oryzivora*)	4
White Java finch (*Munia oryzivora*)	3
Fawn-and-white bengalee (*Uroloncha flavomaculata*)	3
Brown-and-white bengalee (*Uroloncha grisecomaculata*)	1
Masked grassfinch (*Poëphila personata*)	9
Black-faced Gouldian finch (*Poëphila gouldiæ*)	8
Red-faced Gouldian finch (*Poëphila mirabilis*)	8

PASSERIFORMES—continued.

Diamond finch (*Steganopleura guttata*)	6
Zebra finch (*Tæniopygia castanotis*)	5
Cut-throat finch (*Amadina fasciata*)	3
Vera Cruz red-wing (*Agelaius phœniceus richmondi*)	1
Purple grackle (*Quiscalus quiscula*)	4
Yellow-backed cacique (*Cacicus cela*)	1
Bullfinch (*Pyrrhula pyrrhula*)	7
Greenfinch (*Chloris chloris*)	3
Yellowhammer (*Emberiza citrinella*)	1
European goldfinch (*Carduelis carduelis*)	7
Bramblefinch (*Fringilla montifringilla*)	6
European siskin (*Spinus spinus*)	1
Mexican goldfinch (*Astragalinus psaltria mexicanus*)	1
House finch (*Carpodacus mexicanus frontalis*)	2
Purple finch (*Carpodacus purpureus*)	1
Canary (*Serinus canarius*)	9
Green singing finch (*Serinus icterus*)	1
Slate-colored junco (*Junco hyemalis*)	2
Tree sparrow (*Spizella monticola*)	1
White-throated sparrow (*Zonotrichia albicollis*)	4
Song sparrow (*Melospiza melodia*)	1
San Diego song sparrow (*Melospiza melodia cooperi*)	3
Fox sparrow (*Passerella iliaca*)	1
California towhee (*Pipilo crissalis*)	2
Saffron finch (*Sicalis flaveola*)	1
Seed-eater (*Sporophila gutturalis*)	2
Nonpareil (*Passerina ciris*)	5
Blue grosbeak (*Guiraca cærulea*)	1

REPTILES.

Spectacled cayman (*Caiman sclerops*)	1
Alligator (*Alligator mississipiensis*)	41
Gila monster (*Heloderma suspectum*)	6
Giant sonure (*Zonurus giganteus*)	6
Rock python (*Python molurus*)	2
Regal python (*Python reticulatus*)	1
Anaconda (*Eunectes murinus*)	2
Boa constrictor (*Constrictor constrictor*)	8
Blacksnake (*Coluber constrictor*)	2
Chicken snake (*Elaphe quadrivittata*)	1
Gopher snake (*Drymarchon corais couperi*)	1
Garter snake (*Thamnophis sirtalis*)	2
Moccasin (*Agkistrodon piscivorus*)	3
Copperhead (*Agkistrodon mokasen*)	1
Western diamond rattler (*Crotalus atrox*)	1
Banded rattlesnake (*Crotalus horridus*)	1
Ground rattler (*Sistrurus miliarius*)	1
Snapping turtle (*Chelydra serpentina*)	6
Rossignon's snapping turtle (*Chelydra rossignonii*)	1
Wood turtle (*Clemmys insculpta*)	1
Amazon terrapin (*Podocnemis expansa*)	1
South American mud turtle (*Kinosternon scorpioides*)	6
South American terrapin (*Nicoria punctularia*)	1
Painted turtle (*Chrysemys picta*)	2
Cooter (*Pseudemys scripta*)	1
Central American cooter (*Pseudemys ornata*)	1
Box-tortoise (*Terrapene carolina*)	1
Gopher tortoise (*Gopherus polyphemus*)	13
Desert tortoise (*Gopherus agassizii*)	1
Duncan Island tortoise (*Testudo ephippium*)	1
Indefatigable Island tortoise (*Testudo porteri*)	1
Albemarle Island tortoise (*Testudo vicina*)	2
South American tortoise (*Testudo denticulata*)	8

STATEMENT OF THE COLLECTION.

Accessions during the year.

	Mammals.	Birds.	Reptiles.	Total.
esented	46	131	40	217
rn and hatched in National Zoological Park	58	64	28	150
ceived in exchange	19	166	8	193
rchased	5	39	.....	44
ansferred from other Government departments	10	14	18	42
ptured	1	.....	.....	1
eposited	3	5	1	9
Total	142	419	95	656

SUMMARY.

nimals on hand July 1, 1921	1,545
ccessions during the year	656
Total animals handled	2,201
educt loss (by exchange, death, and return of animals on deposit)	520
Animals on hand June 30, 1922	1,681

Class.	Species.	Individuals.
ammals	187	490
rds	262	1,069
ptiles	33	122
Total June 30, 1922	482	1,681

The collection is now larger than ever before. The number of pecies on exhibition on June 30 is 4 more, and the total number of nimals is 130 more than in any previous year.

VISITORS.

The total number of visitors to the park, for the fiscal year, as etermined by count and estimate, was 2,164,254. This is the third ear that the attendance has exceeded 2,000,000. The greatest attendance in any one month was 394,703 in April, 1922, an average er day of 13,156.

The attendance by months was as follows:

1921.		1922.	
ly	167,650	January	51,676
ugust	172,500	February	77,541
eptember	197,700	March	181,039
ctober	258,000	April	394,703
ovember	123,325	May	278,550
ecember	79,570	June	180,000

Schools, classes, and other organizations visiting the park during he year numbered 205, with a total of 13,585 individuals.

IMPROVEMENTS.

The work of grading in the west central part of the park, commenced six years ago but discontinued during the war, was again taken up and the major part of the leveling and filling, as originally planned, was completed during the year. A large area of ground is now available for comparatively level paddocks for the exhibition of hoofed animals, and the way is opened up for decided improvements in the main roadway traversing the park. Many trees removed during this work were cut into logs and, during the winter, sawed into lumber of suitable grades for regular use.

The entire western wall of the antelope house, involving the cages and yards, long in a bad state of repair, was entirely rebuilt. The lower part was extended out, with concrete walls and new roof. The platform and approach to the eastern entrance were also remodeled. The building has been greatly improved in appearance and the animals have been given much more satisfactory quarters.

The older bear dens near the Harvard Street entrance were thoroughly repaired, provided with new concrete floor, tank, and gutter, and the ironwork painted.

Three large outdoor cages for hawks, owls, and Australian grass paroquets were constructed; the Henderson outdoor parrot cage was covered with new wire and painted; the inside quarters for hippopotamuses and tapirs repaired and enlarged; a concrete storehouse for paints and oils was built near the machine shop; the tennis courts were improved; repairs were made to the heating service in the monkey and lion houses; an electric pump and motor was installed at the pelican pond so that water from the creek can be used; and the gap in the boundary fence along the southern border of the park was closed by a new wire fence.

At the close of the year considerable progress had been made in a complete rebuilding of the old wolf yards and fox dens below the sea-lion pool.

ALTERATIONS OF BOUNDARIES.

There is available for the purchase of a narrow strip of land near the Adams Mill Road entrance, between the present park boundary and Adams Mill Road, $4,903.66. On March 24, 1921, the attention of the Secretary of the Treasury was called to the provisions of the sundry civil act relating to the purchase of this land. The matter was referred to the United States attorney's office, and, the owners having declined to sell within the limits set by the act for purchase by agreement, steps were taken toward the institution of proceedings of condemnation. During the past year no further progress has been reported.

IMPORTANT NEEDS.

Restaurant.—A suitable restaurant building remains the most gent need of the park. As pointed out in previous reports the refreshment stand, originally constructed when the attendance s very small, is in a bad condition and is wholly inadequate to ve the needs of the public. Following the acquisition by the park a large quantity of valuable chestnut and oak timbers and lumber, mentioned in the report for last year, and in consideration of fact that much of the work of construction can now be done by gular park employees, the estimated necessary appropriation for h a structure as is needed has been reduced to $20,000. The old reshment stand at the Connecticut Avenue entrance, on land re-ntly transferred to the Government as an addition to the park, ould also be replaced by a new and more sightly booth. The in-eased income from rental of these two concessions will well repay r the construction of buildings adequate for the service of the nstantly increasing number of visitors.

Bird house.—Estimates for a new bird house were submitted r several years prior to the war, but were never favorably acted on by Congress. The need for a new building for the exhibition birds is now greater than ever before. The old building was nstructed of the cheapest materials many years ago, as a tempo-y relief, and it is now in a very bad state of repair. It also ovides far too little space for the collection and far too little room visitors; on days of large attendance the public aisles are greatly ercrowded. The collection of birds is one of great importance, ntaining as it does numerous rare, interesting, and beautiful cies; and new arrangements for its care and exhibition to the blic should not much longer be delayed.

Respectfully submitted.

N. HOLLISTER,
Superintendent.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 7.

REPORT ON THE ASTROPHYSICAL OBSERVATORY.

SIR: The Astrophysical Observatory was conducted under the following passage of the sundry civil act, approved March 4, 1921:

Astrophysical Observatory: For maintenance of the Astrophysical Observatory, under the direction of the Smithsonian Institution, including assistants, purchase of necessary books and periodicals, apparatus, making necessary observations in high altitudes, repairs and alterations of buildings, and miscellaneous expenses, $15,500.

The observatory occupies a number of frame structures within an inclosure of about 16,000 square feet south of the Smithsonian administration building at Washington, and also a cement observing station and frame cottage for observers on a plot of 10,000 square feet leased from the Carnegie Solar Observatory on Mount Wilson, Calif.

A new solar observing station on Mount Harqua Hala, Ariz., was erected in July, 1920, at the expense of funds donated for the purpose by Mr. John A. Roebling, of Bernardsville, N. J., and this station has been occupied as a solar radiation observing station by the Astrophysical Observatory since October, 1920.

The present value of the buildings and equipment for the Astrophysical Observatory, owned by the Government, is estimated at $50,000. This estimate contemplates the cost required to replace the outfit for the purposes of the investigation.

WORK OF THE YEAR.

At Washington.—The director, with Mr. Fowle and Mrs. Bond, was engaged much of the year on the preparation and proof reading of Volume IV of the Annals of the Observatory. This quarto volume of 390 pages, including 60 illustrations and 118 pages of numerical tables, covers the work of the years 1912 to 1920, and was published in June, 1922. New apparatus and methods of observing are described and illustrated, and a large mass of solar observations is presented and discussed. Evidence is given of many kinds which indicates the solar variability. Reference is made to applications of the results which have been made by several meteorologists.

In preparation for work proposed for the expedition to Mount Wilson in the summer of 1922, Mr. Aldrich, in consultation with

ıe director, prepared the sensitive parts of a galvanometer and vacuum bolometer of usual types for solar work, and also of a acuum galvanometer and vacuum bolometer of very unusual design uited to observing the energy distribution in the spectra of the tars. These extremely delicate and sensitive instruments required xtraordinary skill and patience for their construction and testing. Acknowledgments are due the Director of the Bureau of Standards, he Director of the Nela Research Laboratory, and also Dr. Elihu Thomson, of Lynn, for aiding these preparations.

The instrument making for these new pieces and others required n the expedition to Mount Wilson, including a special spectrometer, ılate carrier, and other apparatus, was done by the instrument naker, Mr. A. Kramer.

A great many of the " solar constant " observations made at Mount Harqua Hala, Ariz., were reduced by Mr. Fowle and Mrs. Bond in :onsultation with the director. Despite our long experience in ıolar-radiation work, new problems and difficulties still crop up. The publication of the Mount Harqua Hala results has hitherto been withheld so that a comprehensive discussion of them might be made :o reveal and correct any systematic errors.

Expedition to Chile.—It became necessary for the director to undertake a visit to Chile to inspect the observing station at Montezuma maintained by the Hodgkins fund for the study of the solar variations, in cooperation with the stations in California and Arizona. Leaving Washington near the end of October, 1921, he spent the month, November 15 to December 15, at the station and returned to Washington early in January, 1922. During the month at Montezuma he revised all the adjustments of apparatus and some of the methods employed there, besides assisting in the daily observations and reductions on 26 days. Silver disk pyrheliometer S. I. No. 5, loaned by the Department of Agriculture for the purpose, was compared with instruments at Montezuma, and before and afterwards with instruments at Washington. No change in the scale of pyrheliometry was disclosed by these comparisons.

Expedition to Mount Wilson.—In June an expedition, including the director and Mr. L. B. Aldrich, went out to Mount Wilson. Four objects were in view. First, to inspect the station at Mount Harqua Hala and compare pyrheliometers there with silver disk pyrheliometer S. I. No. 5, above mentioned, so as to connect the fundamental scales of pyrheliometry in Arizona and Chile. Second, to repeat with all possible precautions and variations of method the determination of the form of the solar spectrum energy curve outside the atmosphere. Third, to undertake preliminary measurements of the distribution of energy in the spectra of the brighter stars.

Fourth, to try further experiments with the collection and storage of solar heat for cooking purposes.

The station on Mount Harqua Hala was visited by the director and found in a highly improved condition owing to the zeal of Mr. Moore, in charge there. The laboratory has been sheathed outside with metal to protect the adobe walls from rain, and painted and embellished within, lightning rods have been installed, a small shop built, wireless telephonic apparatus erected, a garage built at the foot of the mountain trail, and regular weekly mail and supply trips arranged. Solar-constant observations have been made on upward of 70 per cent of the days of the year, and much computing and testing attended to. Comparisons made during and after the director's visit show no change in the scale of pyrheliometry, so that as far as this is concerned the results at Harqua Hala are comparable with those at Montezuma. But from lack of sensitiveness of the galvanometer the energy curves show less detail at Harqua Hala, and this it was decided must be corrected as early as possible to put the two stations on parallel footings.

In conversation with Mr. Moore, the director devised a new improvement of the "short method" which, it was agreed, would promote accuracy while greatly abridging computation. This will be introduced at both stations as soon as the new determination of the form of the solar energy curve outside the atmosphere is worked out.

At Mount Wilson, the time before the end of the fiscal year, June 30, only sufficed for a partial installation of new "solar constant" apparatus replacing that which in 1920 was removed to Harqua Hala. But it may be said by anticipation that later results were secured on the distribution of energy in the spectra of 11 of the brighter stars by bolometric work in connection with the 100-inch telescope, and also that the solar energy curve was traced bolometrically with both glass and rock-salt prisms. With the latter, experiments were made at wave lengths from far down in the ultraviolet to an infra-red wave length of 14 microns, with allowance for stray light and for atmospheric and instrumental transmission.

Unfortunately the cover of the oil reservoir of the solar cooking apparatus had been blown off in a very high wind, and snow having gotten in, much water had leaked into the oil reservoir. After a long time of fruitlessly attempting to boil out this water, the oil and water were at length removed, but not in time to undertake the proposed new experiments before the return of the expedition to Washington in September.

OPINIONS OF THE SOLAR RADIATION WORK.

As the Institution is making great efforts to continue and to improve its solar-radiation measurements, the director felt concerned to invite the opinions of competent critics, in order to know if these

ors seemed quite justified by their probable outcome. Accordly, in a report to the American representatives of the International Astronomical Union he wrote as follows:

t is the intention of the Smithsonian Institution to continue daily observans at Mount Harqua Hala and Montezuma certainly until July, 1923, at ich time it is proposed to consider the state of the work and the results ched with a view to deciding whether it is worth while to continue daily ervations of the variability of the sun indefinitely or whether the usefulss of that work is unequal to the trouble and expense involved.
An expression of opinion on the part of those interested in the subject would of great value to the Smithsonian Institution in making this decision.

In their meeting at Washington, April 3 and 4, 1922, the assembled nerican representatives, including meteorologists, physicists, and ronomers, passed unanimously, after earnest supporting speeches, e following resolution:

Solar radiation.—Moved: That it is the sense of the American section of International Astronomical Union that the continuation of the solarliation work under the auspices of the Smithsonian Institution in at least o stations is highly desirable, both from an astronomical and a meteorological nt of view. Adopted.

Later, in the Congress at Rome, May 2, 1922, the international presentatives indorsed this opinion with equal unanimity and rnestness, passing the following resolution:

The section of meteorology of the International Geodetic and Geophysical ion records its appreciation of the excellent work done by the Astrophysical servatory of the Smithsonian Institution of Washington in determining with high degree of accuracy the intensity of solar radiation outside the earth's mosphere. It is of the opinion that the daily values now being obtained Mount Montezuma, Chile, and Mount Harqua Hala, Ariz., will prove of eat value in the solution of certain meteorological problems. It therefore presses the hope that these determinations may be continued for a considerle period of years.

PROPOSED SOLAR RADIATION STATIONS.

In view of these impartial expert opinions, it is a pleasure to add at Mr. John A. Roebling has made it possible to assure the conuation of the solar-constant stations at Harqua Hala and Montema until July, 1925. By that time sufficient data will doubtless secured to prove whether they ought to be continued longer.

A movement is being made in Australia, led by Rev. E. F. Pigot, Riverview College, to provide a solar-constant observing station milar to those maintained by the Smithsonian Institution. Funds ave been raised there, and a portion of the apparatus has been urchased from the Institution. Also the Meteorological Service f Argentina is proposing to equip its station at La Quiaca for imilar observations, in order the more directly to support the regular weekly long-range forecasts which it bases on solar radiation

results. In order to aid these enterprises, the director has designed a full set of solar-constant apparatus, and it is expected that within the next fiscal year two sets will be prepared by contract for the Australian and Argentine stations.

PERSONNEL.

Mr. A. F. Moore, field director at Mount Harqua Hala, was added to the staff of the Astrophysical Observatory on July 1, 1921.

SUMMARY.

The outstanding event of the fiscal year was the publication in June, 1922, of Volume IV of the Annals of the Astrophysical Observatory, covering results from 1912 to 1920. New apparatus and methods are described, a critical survey of the work is given, and long tabular summaries of all solar observations made are included. From these results it is indicated in numerous ways that the sun's output of radiation varies, that the march of its variations depends on the sun's rotation, and that it produces effects of several kinds on terrestrial physics and meteorology. Much progress has been made at the new station on Mount Harqua Hala. Solar-constant observations were made there on over 70 per cent of the days, but are withheld from publication until completely discussed for evidences as to systematic errors. Expeditions were made to Chile and to Mount Wilson.

Respectfully submitted.

C. G. ABBOT,
Director.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 8.

PORT ON THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

ıR: I have the honor to submit the following report on the opera-
s of the United States Bureau of the International Catalogue of
ntific Literature for the fiscal year ending June 30, 1922.
lthough the financial conditions of this enterprise were, in com-
with all other international interests, practically crippled in
beginning of the war, almost all of the regional bureaus have
inued to collect and prepare for future publication this index
he world's scientific literature. The activities of this regional
au have been continued as usual and the data relating to
erican scientific literature is regularly being prepared ready to
vard to the London Central Bureau whenever it is found pos-
e to resume publication.
n international convention is to be held in Brussels beginning
y 22, 1922, to determine the future of the catalogue, and the
ithsonian Institution has prepared and will submit to the dele-
es then present the following statement of its position:

OSALS OF THE SMITHSONIAN INSTITUTION REGARDING THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

is the belief of the Smithsonian Institution:

That a classified subject and author index to the literature of science is led.

That no better means exists of attaining the end sought than by carrying the original plan of the International Catalogue based on international eration guided by uniform rules and schedules modified to meet changes he several sciences and, when possible, broadened in scope to include the d technical branches of these sciences.

That every effort should be made to cooperate with all similar enter-es, including abstracting agencies, existing or projected, not only to ent duplication of labor but also to better serve the demands of those in l of bibliographic aid.

That on account of abnormal conditions still controlling publishing costs monetary exchange it is probable that actual publication can not be resent resumed unless financial aid is had from some source outside the ent organization; however, it is believed:

That the international organization should be kept in being through ual agreement to continue the work of the regional bureaus until such e as it may be economically possible to resume publication. When that

time arrives the stock of complete sets already published should be advertised for sale at a price within the reach of the smaller libraries and institutions many of whom, although desiring this unique reference work, were prevented from subscribing on account of the high original cost.

Were the price reduced even to one-fourth of the original, stock on hand at that figure represents a sufficient sum to meet all outstanding obligations and leave a surplus for working capital.

The intention in preparing this statement was to take into consideration all existing conditions, and it is believed that if the suggestions are indorsed by the convention, the organization may be kept in being through the continued activities of the various regional bureaus and that when international conditions become more stable the central bureau will be able to meet its financial obligations and resume publication.

When in 1896, 1898, and 1900, the representatives of practically all the civilized nations and foremost scientific institutions met in London to consider and formulate organic rules making possible cooperation between all nations recording scientific investigations, it was their intention not only to produce a catalogue and index of published records as an aid to investigators and bibliographers, but also to establish international cooperation to aid in developing and making available to all those in any way concerned in scientific matters the world's output of scientific records. The material for the 17 annual volumes of the International Catalogue of Scientific Literature issued for the years 1901 to 1914, inclusive, was collected by some 33 regional bureaus and published by the central bureau in London. This unique international cooperative organization, in the main, still exists and although actual publication has, for financial reasons, been suspended pending a more nearly normal condition in international finance and politics, the work of collecting and preparing for publication the records of scientific research is still going on. It would now seem advisable to consider how, until the catalogue can be again published, these records may be made available and to plan for the future improvement and extension of the catalogue service.

The principal methods of furnishing information of the published records of scientific investigations are: Card indexes and periodical bibliographies; abstract journals; year books, cumulative catalogues, and indexes.

To prepare any of these, a complete list of journals is needed but unfortunately no such complete current list now exists. One of the first needs of the catalogue organization, when publication is resumed, will be to bring its own list of journals up to date, the last supplement to the original list having been published in 1904, making the total number of journals listed at that time, 5,627. Since

there is, aside from its use in connection with the catalogue, a decided need and demand for such a list, this bureau is considering the advisability of undertaking the preparation of a revised list of journals, and of soliciting to that end the cooperation of the existing regional bureaus, who would be requested, through the central bureau, to furnish lists of the periodicals published in their several regions.

It is thought that when this material is collected arrangements for publication may be made without cost to the cataloque organization and even that, through such a published list, some financial benefit to the International Catalogue may be derived, but failing in this the labor involved would be justified on account of the need for the current list by the catalogue organization as soon as publication is resumed.

In whatever form bibliographic aid is furnished the method of preparation is the same. In all cases the original publications must be first collected whether they are to be catalogued, indexed, classified, or abstracted, and regular and systematic means must exist to gather all publications, not only periodicals but also single issues. The regional bureaus collectively have advantages in this respect never before available to bibliographers and practically all of the world's scientific literature is through them available. As the catalogue organization was at the London conference of 1920 directed to cooperate with abstracting journals and other similar agencies, it is felt that, although the organization has been disappointed in not yet being able to resume publication, it would be justified in extending its aid to other publishing agencies by furnishing citations to scientific publications being catalogued by the regional bureaus. In return for such aid the catalogue would be benefited by having available abstracts prepared by experts, thus simplifying the work of classification. A final ideal combined organization would, through international cooperation, produce all bibliographic publications of whatever type, and it is felt that when close cooperation is once established between all agencies having kindred aims it will prove essential for their mutual benefit to merge these enterprises into one organization. This plan should aim to eventually include not only the literature of science but also that of related technical industries whose existence and advance depend on the progress made in pure science.

It is realized that to carry out these plans a very extensive organization would be necessary, but when the many great interests involved and their evident unfilled needs are taken into consideration it becomes apparent that some definite effort should be made to

consolidate the numerous independent agencies to the end that all may be benefited. By combined effort much duplication of labor and cost would be saved, and most important of all, bibliographers, students, and industrial agencies would be furnished with prompt and authoritative information regarding the literature of the subjects relating to their several interests.

Very respectfully yours,

LEONARD C. GUNNELL.
Assistant in Charge.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 9.

REPORT ON THE LIBRARY.

SIR: I have the honor to submit the following report on the activities of the library of the Smithsonian Institution for the fiscal year ended June 30, 1922.

Possessing more than a million volumes, pamphlets, manuscripts, and charts, acquired chiefly in exchange, the library has continued its steady, ever-increasing growth. There are now, according to the records, 888,128 publications deposited at the Library of Congress and 156,275 belonging to the United States National Museum. Books belonging to other branches of the Institution have been estimated at 5,000.

Its volumes are being constantly borrowed and consulted within the buildings. Interlibrary loans to accredited libraries, where distance permits, are being continued, and in a number of instances arrangements have been made for the photostating of pages from rare volumes not permitted to leave the buildings.

Each day typewritten lists of original scientific articles appearing in periodicals received for the Smithsonian deposit in the Library of Congress are prepared and sent to heads of scientific bureaus under the Institution for their information and for circulation. These daily bibliographical lists, begun last November at the request of the secretary, Dr. Charles D. Walcott, have been well received from the start. Requests from other Government bureaus and research organizations have been made for copies, which it has not been possible to supply.

The facilities of the library have been taxed to the utmost since the beginning of the war for information on various technical subjects. Especially has this been so in connection with aeronautics. In this one subject alone it is safe to say that the Institution, as one of the sources, has been the means of saving the United States Government many thousands of dollars which would have had to be paid if the information relating to the prior art had not been analyzed and available.

SMITHSONIAN MAIN LIBRARY.

As most noteworthy among the accessions of the main library might be mentioned copies of the *Göttingische Gelehrte Anzeigen* for 1758, 1760, 1808, 1813, and 1814, the gift of the Gesellschaft für

Wissenschaften zu Göttingen, and the Transactions of the Royal Dublin Society for 1803 to 1810, the gift of that society.

Material published in oriental languages, while it is not yet received in large quantities as compared with European publications, is continuing to increase, and it is hoped that in the future the Institution may have in the collections at the Library of Congress the most representative collection of this material that can be brought together in this country. The furnishing of English transliterations by the donors, as is done by the Vajiranaña National Library, Bangkok, is of great assistance.

In order that material received for the library may be made available to the public at the earliest possible moment, publications have been transmitted daily, as in years past, to the Smithsonian deposit in the Library of Congress. The number of publications so transmitted during the year was 8,907, consisting of 7,502 complete volumes, 800 parts of volumes, 376 pamphlets, and 229 charts. The accession numbers extended from 537,230 to 539,988. The number of publications transmitted without being entered or accessioned, including Government documents, was 7,213.

Cataloguing.—While the record for volumes catalogued has again been surpassed, it has not been possible during the year to catalogue the remainder of the large accumulation of theses sent during the war from European universities. Following are the year's records:

Volumes catalogued	6,502
Volumes recatalogued	55
Charts catalogued	160
Cards typewritten	4,243
Library of Congress cards filed	502
New titles added	1,614

Exchanges.—The securing of publications in exchange for the completion of sets in the library has been continued, with the following results:

	Wanted.		Secured.	
	Volumes.	Parts.	Volumes.	Parts.
Library of Congress:				
Smithsonian division	1,620	1,184	520	58
Periodical division	35	129	11	28
Order division	30	.....	38	1
United States National Museum	81	83	25	40
	2,766	1,396	594	653

OFFICE LIBRARY.

The growth and increasing value of the office library is perhaps t fully realized. The total number of its accessions as reached s year now numbers 27,100, of which 394 volumes were added ring the year. It consists of the following collections: Aero- utical, art room, De Peyster, deposited collections, employees' rary, periodicals (back numbers), reading room, reference room. The aeronautical collection, founded by Samuel Pierpont Langley ıile Secretary of the Smithsonian Institution, has been since gmented by gifts from Alexander Graham Bell, James Means, ıarles D. Walcott, the Aero Club of America, and other indi- luals and organizations that have had an important part in the velopment of aeronautics during its pioneer stage. During the esent year some 45 volumes were added from the estate of James eans, by gift of his sons Dr. James H. Means and Philip Ains- ›rth Means.

By the transfer of the employees' library to the east stacks in e main hall of the Smithsonian building, it has been rendered more adily accessible to employees, and additional space for its ex- ınsion has been provided. The collection of back numbers of ›riodicals has been moved to the west stacks.

While the office library is primarily a reference library and books re more often consulted than borrowed, many of the volumes are vailable for loan purposes, and many employees of the Institution vail themselves of its privileges. The total number of loans for he year was 3,330.

ASTROPHYSICAL OBSERVATORY LIBRARY.

Loans from the Astrophysical Observatory Library are made through the office library, and are included in the records of loans from that library. During the year 79 volumes, 26 parts, and 40 pamphlets were added, and 53 volumes sent to the bindery. The library is primarily a reference library for the use of the staff of the Astrophysical Observatory.

BUREAU OF AMERICAN ETHNOLOGY LIBRARY.

The report of operations of the library of the Bureau of Ethnology will be found in the report of the chief of that bureau. It is admin- stered directly under his care.

UNITED STATES NATIONAL MUSEUM LIBRARY.

The facilities of the Museum Library have been taxed as never efore. The number of books loaned was 10,886, and as many more 'ere consulted without being taken from the library.

Valuable material has been donated as in preceding years by friends and members of the staff of the United States National Museum. Among the donors are Messrs. H. S. Barber, August Busck, Austin H. Clark, W. H. Dall, H. G. Dyar, O. P. Hay, Walter Hough, W. R. Maxon, E. G. Mitchell, C. W. Richmond, J. H. Riley, S. A. Rohwer, W. S. Schaus, B. H. Swales, and Dr. and Mrs. Charles D. Walcott. Especially noteworthy are the gifts of Doctor Walcott to the geological and paleontological collections, and the gifts of Dr. William H. Dall to the section of the division of mollusks, numbering 233 titles.

Many of these collections have been received and they have an intimate relation to the library in that the donors were connected with the Museum and brought the collection together during the progress of their researches. The list of donors in the foregoing paragraph will give some idea of the number of collections of this kind that have been added. Special attention should be called to the Iddings and Walcott collections, given during the previous year. These required assorting, arranging, and checking with other publications of the same kind on the shelves, in order to prevent duplication, for which there is not enough room at the present time.

SECTIONAL LIBRARIES.

In order that the volumes and publications of the Museum Library may be readily accessible to the members of the administrative and scientific staff of the Museum, 35 sectional libraries are maintained, namely:

Administration.
Administrative assistant's office.
American archeology.
Anthropology.
Birds.
Botany.
Editor's office.
Fishes.
Foods.
Geology.
Graphic arts.
History.
Invertebrate paleontology.
Mammals.
Marine invertebrates.
Medicine.
Mechanical technology.
Minerals.
Mineral technology.
Mollusks.
Old-world archeology.
Paleobotany.
Photography.
Physical anthropology.
Property clerk's office.
Registrar's office.
Reptiles and batrachians.
Superintendent's office.
Taxidermy.
Textiles.
Vertebrate paleontology.
War library.
Wood technology.

llowing statistics have been submitted by Mr. N. P. Scud-
arge of the library:

he Museum Library:	
es	60,681
ılets	95,594
ıl	156,275
es	2,023
ılets	4,185
ıl	6,208
; :	
entered	13,827
n cards	2,714
cards for new periodicals	271
g (not including periodicals) :	
	860
ılets	4,178
typewritten	6,183
cards	5,214
rds	3,655
nd	398
which 7,012 went to the sections)	10,886
Congress books borrowed	1,583
Congress books returned	1,886
from other libraries	106
to other libraries	132

eneral library of the Museum is located in the Natural Building. In order that reference facilities may be readily to divisions of the Museum located in other buildings, the gical library is maintained in the Arts and Industries Build- the office library in the Smithsonian Building is at the dis- Museum divisions located there.

TECHNOLOGICAL LIBRARY.

chnological library, located in the old Museum Building, is ıg the reorganization and rearrangement of its material. ıber of loans made during the fiscal year ended was 220. ; of the scientific depository catalogue are not at present , owing to repairs and remodeling now in progress in the quarters.

NATIONAL GALLERY OF ART LIBRARY.

ls of the library of the National Gallery of Art are at pres- in the Natural History Library of the Museum, and period- ered upon the records and included in periodical statistics ibrary. Accessions for the fiscal year, exclusive of period- ered 32 volumes and 36 pamphlets.

FREER GALLERY OF ART LIBRARY.

Additions to the library of the Freer Gallery of Art during the year numbered 14 volumes. The number of volumes now in the library, exclusive of deposited books, is 127. A number of volumes relating to art have been deposited by the Smithsonian Institution in the Freer Building for use in connection with the collections, among them the set of Serindia, by Sir Aurel Stein, comprising five large quarto volumes with plates in color, presented by the Secretary of State for India.

NATIONAL ZOOLOGICAL PARK LIBRARY.

Since the establishment of a library at the National Zoological Park in 1905, there have been 378 accessions. The number during the fiscal year ended was 15, comprising reports of kindred zoological gardens and parks, and leading zoological works issued during the year.

SUMMARY OF ACCESSIONS.

The accessions for the year, including parts to complete sets, with the exception of additions to the library of the Bureau of American Ethnology, may be summarized as follows:

Branch.	Volumes.	Other publications.	Total.
Astrophysical Observatory	79	66	145
Freer Gallery of Art	14	.....	14
National Gallery of Art	32	36	68
National Zoological Park	15	.....	15
Smithsonian deposit, Library of Congress	7,502	1,405	8,907
Smithsonian office	394	45	439
United States National Museum	2,023	4,185	6,208
Total	10,059	5,737	15,796

Respectfully submitted.

PAUL BROCKETT,
Assistant Librarian.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 10.

REPORT ON THE PUBLICATIONS.

IR: I have the honor to submit the following report on the pubtions of the Smithsonian Institution and its branches during the r ending June 30, 1922:

'he Institution proper published during the year 9 papers in series of Miscellaneous Collections, 2 annual reports and pamphcopies of 55 articles in the appendixes to the reports, a reprint the Smithsonian Physical Tables, and 5 special publications. e Bureau of American Ethnology published 3 bulletins and 2 ıual reports. The United States National Museum issued 1 ıual report, 3 volumes of proceedings, 72 separates from the prodings, 5 bulletins, 2 separate parts of bulletins, and 4 parts of umes in the series Contributions from the United States National rbarium.

The total number of publications distributed by the Smithsonian l its branches was 165,196, which includes 251 volumes and septes of the Smithsonian Contributions to Knowledge, 20,777 volıes and separates of the Smithsonian Miscellaneous Collections, 263 volumes and separates of the Smithsonian annual reports, 806 volumes and separates of the National Museum publications, 215 publications of the Bureau of American Ethnology, 3,159 ecial publications, 706 volumes of the Annals of the Astrophysical servatory, 64 reports on the Harriman Alaska expedition, 812 orts of the American Historical Association, and 143 publicaıs presented to but not issued by the Smithsonian Institution.

SMITHSONIAN MISCELLANEOUS COLLECTIONS.

Of the Smithsonian Miscellaneous Collections, volume 67, 1 paper s issued; volume 72, 7 papers; volume 73, 1 paper; in all, 9 papers follows:

VOLUME 67.

To. 7. Cambrian Geology and Paleontology. IV, No. 7. Notes on Structure Neolenus. By Charles D. Walcott. December 20, 1921. Pp. 365–456, pls. 105. (Publ: 2584.)

VOLUME 72.

8. A Review of the Interrelationships of the Cetacea. By Herluf Winge. ıly 30, 1921. 97 pp. (Publ. 2650.)

10. The Circulatory System in Bone. By J. S. Foote. August 20, 1921. pp., 6 pls. (Publ. 2652.)

No. 11. The Echinoderms as Aberrant Arthropods. By Austin H. Clark. July 20, 1921. 20 pp., 24 figs. (Publ. 2653.)

No. 12. A Study of the Body Temperature of Birds. By Alexander Wetmore. December 30, 1921. 52 pp. (Publ. 2658.)

No. 13. The Melikeron, an Approximately Black-Body Pyranometer. By L. B. Aldrich. January 25, 1922. 11 pp., 5 figs. (Publ. 2662.)

No. 14. A New Sauropod Dinosaur from Ojo Alamo Formation of New Mexico. By Charles W. Gilmore. January 31, 1922. 9 pp., 2 pls. (Publ. 2663.)

No. 15. Explorations and Field Work of the Smithsonian Institution in 1921. May 26, 1922. 128 pp., 132 figs. (Publ. 2669.)

VOLUME 73.

No. 1. Opinions Rendered by the International Commission on Zoological Nomenclature. Opinions 68 to 77. January 31, 1922. 73 pp. (Publ. 2657.)

SMITHSONIAN ANNUAL REPORTS.

REPORT FOR 1919.

The complete volume of the Annual Report of the Board of Regents for 1919, together with the pamphlet copies of the papers in the general appendix, was received from the printer during the year.

Annual Report of the Board of Regents of the Smithsonian Institution, showing operations, expenditures, and condition of the Institution for the year ending June 30, 1919. xii+557 pp., 135 pls., 24 text figs. (Publ. 2590.)

The appendix contained the following papers:

Modern theories of the spiral nebulæ, by Heber D. Curtis.

A determination of the deflection of light by the sun's gravitational field, from observations made at the total eclipse of May 29, 1919, by Sir F. W. Dyson, A. S. Eddington, and C. Davidson.

Wireless telephony, by N. H. Slaughter.

Radium and the electron, by Sir Ernest Rutherford.

The "HD–4." A 70-miler with remarkable possibilities developed at Dr. Graham Bell's laboratories on the Bras d'Or Lakes, by William Washburn Nutting.

Natural resources in their relation to military supplies, by Arthur D. Little.

Glass and some of its problems, by Sir Herbert Jackson.

The functions and ideals of a national geological survey, by F. L. Ransome.

The influence of cold in stimulating the growth of plants, by Frederick V. Coville.

Floral aspects of British Guinea, by A. S. Hitchcock.

Milpa agriculture, a primitive tropical system, by O. F. Cook.

On the extinction of the mammoth, by H. Neuville.

A preliminary study of the relation between geographical distribution and migration, with special reference to the Palaearctic region, by R. Meinertzhagen.

The necessity of State action for the protection of wild birds, by Walter E. Collinge.

Glimpses of desert bird life in the Great Basin, by Harry C. Oberholser.

The Division of Insects in the United States National Museum, by J. M. Aldrich.

seventeen-year locust, by R. E. Snodgrass.
nology and the war, by L. O. Howard.
types of southwestern cliff houses, by J. Walter Fewkes.
he race history and facial characteristics of the aboriginal Americans, by . H. Holmes.
opportunity for American archeological research in Palestine, by James Montgomery.
differentiation of mankind into racial types, by Arthur Keith.
exploration of Manchuria, by Arthur de C. Sowerby.
origin and beginnings of the Czechoslovak people, by Jindřich Matiegka.
graphic education in America, by Albert Perry Brigham.
ress in national land reclamation in the United States, by C. A. Bissell.
ard Rathbun, by Marcus Benjamin.
eat chemist: Sir William Ramsay, by Ch. Moureu.

REPORT FOR 1920.

he complete volume of the Annual Report of the Regents for) was received from the Public Printer in May, 1922.

ual Report of the Board of Regents of the Smithsonian Institution, showg operations, expenditures, and condition of the Institution for the year ding June 30, 1920. 704 pp., 230 pls., 105 text figs. (Publ. 2622.)

he appendix contained the following papers:

ying the sun's heat on mountain peaks in desert lands, by C. G. Abbot.
habitability of Venus, Mars, and other worlds, by C. G. Abbot.
t suns, by H. H. Turner.
ndle of meteorological paradoxes, by W. J. Humphreys.
determination of the structure of crystals, by Ralph W. G. Wyckoff.
Aston's experiments on the mass spectra of the chemical elements, with troduction by C. G. Abbot.
mins, by W. D. Halliburton.
acidity—its nature, measurement, and relation to plant distribution, by lgar T. Wherry.
chemistry of the earth's crust, by Henry S. Washington.
r causes of land and sea oscillations, by E. O. Ulrich.
Bryozoa, or moss animals, by R. S. Bassler.
horned dinosaurs, by Charles W. Gilmore.
thm in nature, by F. W. Flattely.
sitism and symbiosis in their relation to the problem of evolution, by aurice Caullery.
l suppression of agricultural pests by birds, by W. L. McAtee.
occult senses in birds, by Herbert H. Beck.
entures in the life of a fiddler crab, by O. W. Hyman.
senses of insects, by N. E. McIndoo.
resplendent shield-bearer and the ribbed cocoon-maker: Two insect inbitants of the orchard, by R. E. Snodgrass.
origin of insect societies, by Auguste Lameere.
botanical gardens of Jamaica, by William R. Maxon.
uras of the old world and new: An account of their narcotic properties d their use in oracular and initiatory ceremonies, by William E. Safford.
ct of the relative length of day and night on flowering and fruiting of ants, by W. W. Garner and H. A. Allard.
worship of the Hopi Indians, by J. Walter Fewkes.

Racial groups and figures in the Natural History Building of the United States National Museum, by Walter Hough.

Notes on the dances, music, and songs of the ancient and modern Mexicans, by Auguste Genin.

The Ralph Cross Johnson collection in the National Gallery at Washington, D. C., by George B. Rose.

REPORT FOR 1921.

The report of the executive committee and proceedings of the Board of Regents of the Institution, and the report of the secretary, both forming part of the annual report of the Board of Regents to Congress, were issued in pamphlet form in November, 1921.

Report of the executive committee and proceedings of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1921. 18 pp. (Publ. 2660.)

Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1921. 119 pp. (Publ. 2659.)

The general appendix to this report, which was in press at the close of the year, contains the following papers:

The daily influence of astronomy, by W. W. Campbell.

Cosmogony and stellar evolution, by J. H. Jeans.

The diameters of the stars, by A. Danjon.

Isotopes and atomic weights, by F. W. Aston.

Modifying our ideas of nature: The Einstein theory of relativity, by Henry Norris Russell.

The alkali problem in irrigation, by Carl S. Scofield.

An outline of geophysical-chemical problems, by Robert B. Sosman.

The yielding of the earth's crust, by William Bowie.

The age of the earth, by the Right Hon. Lord Rayleigh, W. J. Sollas, J. W. Gregory, and Harold Jeffreys.

The department of geology of the U. S. National Museum, by George P. Merrill.

Some observations on the natural history of Costa Rica, by Robert Ridgway.

The historic development of the evolutionary idea, by Branislav Petronievics.

The heredity of acquired characters, by L. Cuénot.

Breeding habits, development, and birth of the opossum, by Carl Hartman.

Some preliminary remarks on the velocity of migratory flight among birds, with special reference to the Palaearctic region, by R. Meinertzhagen.

A botanical reconnaissance in southeastern Asia, by A. S. Hitchcock.

Ant acacias and acacia ants of Mexico and Central America, by W. E. Safford.

The fall webworm, by R. E. Snodgrass.

Collecting insects on Mount Rainier, by A. L. Melander.

The science of man: Its needs and prospects, by Karl Pearson.

Pigmentation in the old Americans, with notes on graying and loss of hair, by Aleš Hrdlička.

Ancestor worship of the Hopi Indians, by J. Walter Fewkes.

The Indian in literature, by Herman F. C. Ten Kate.

Leopard-men in the Naga Hills, by J. H. Hutton.

A new era in Palestine exploration, by Elihu Grant.

The alimentary education of children, by Marcel Labbé.

A fifty-year sketch history of medical entomology, by L. O. Howard.

Laid and wove, by Dard Hunter.

Lead, by Carl W. Mitman.

William Crawford Gorgas, by Robert E. Noble.

SPECIAL PUBLICATIONS.

The following special publications were issued during the year:

Catalogue of the Herbert Ward African Collection. 8 pp., 12 figs. (Publ. "AT.")

Classified List of Smithsonian Publications Available April 15, 1922. Compiled by Helen Munroe. May 1, 1922. 30 pp. (Publ. 2670.)

Title page and contents of volume 69, Smithsonian Miscellaneous Collections. (Publ. 2654.)

Title page and contents of volume 70, Smithsonian Miscellaneous Collections. (Publ. 2655.)

Title page and contents of volume 71, Smithsonian Miscellaneous Collections. (Publ. 2656.)

PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM.

The publications of the National Museum are: (*a*) The annual report, (*b*) the Proceedings of the United States National Museum, and (c) the Bulletin of the United States National Museum, which includes the Contributions from the United States National Herbarium. The editorship of these publications is vested in Dr. Marcus Benjamin.

During the year ending June 30, 1922, the Museum published 1 annual report, 3 volumes of proceedings, 5 complete bulletins, 2 parts of bulletins, 4 parts of volumes in the series Contributions from the United States National Herbarium, and 72 separates from the proceedings.

The issues of the bulletin were as follows:

Bulletin 100, volume 4. Contributions to the Biology of the Philippine Archipelago and Adjacent Regions. Volume 4: Foraminifera of the Philippine and Adjacent Seas. By Joseph A. Cushman.

Bulletin 113. Life Histories of North American Gulls and Terns. Order Longipennes. By Arthur Cleveland Bent.

Bulletin 114. A revision of the King Snakes: Genus Lampropeltis. By Frank N. Blanchard.

Bulletin 118. Handbook and Descriptive Catalogue of the Collections of Gems and Precious Stones in the United States National Museum. By George P. Merrill, assisted by Margaret W. Moodey and Edgar T. Wherry.

Bulletin 119. Catalogue of the Mechanical Engineering Collection in the United States National Museum. Motors, Locomotives, and Self-propelled Vehicles. By Carl W. Mitman.

Of the separate papers of bulletins, the following were issued:

Bulletin 82. A Monograph of the Existing Crinoids. Volume 1.—The Comatulids. Part 2. By Austin Hobart Clark.

Bulletin 104. The Foraminifera of the Atlantic Ocean. Part 3. Textulariidae. By Joseph Augustine Cushman.

Of the separate papers of the Contributions from the United States National Herbarium, the following were issued:

Volume 20, part 11. The Identification of Berberis Aquifolium and Berberis repens. By Charles V. Piper.

Volume 20, part 12. New or Noteworthy Plants from Colombia and Central America—8. By Henry Pittier.
Volume 22, part 6. Grasses of British Guiana. By A. S. Hitchcock.
Volume 24, part 1. New Plants from Guatemala and Honduras. By S. F. Blake.

Of the separates from the proceedings, 25 were from volume 59, 26 from volume 60, and 21 from volume 61.

PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY.

The publications of the bureau are described in detail in Appendix 4 of this report. The editorial work of the bureau is under the direction of Mr. Stanley Searles, editor.

During the past year two annual reports, the thirty-fifth and the thirty-sixth, and three bulletins were published, as follows:

Thirty-fifth Annual Report. Accompanying paper: Ethnology of the Kwakiutl (Boas). Pts. 1 and 2. 1,481 pp.
Thirty-sixth Annual Report. Accompanying paper: The Osage Tribe: Rite of the Chiefs; Saying of the Ancient Men (La Flesche). 604 pp., 23 pls.
Bulletin 73. Early History of the Creek Indians and Their Neighbors (Swanton). 492 pp., 10 pls.
Bulletin 74. Excavation of a Site at Santiago Ahuitzotla, D. F. Mexico (Tozzer). 56 pp., 19 pls.
Bulletin 75. Northern Ute Music (Densmore). 213 pp., 16 pls.

There were in press or in preparation at the close of the year four annual reports and six bulletins, as follows:

Thirty-fourth Annual Report. Accompanying paper: A Prehistoric Island Culture Area of America (Fewkes).
Thirty-seventh Annual Report. Accompanying paper: The Winnebago Tribe (Radin).
Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guinea Indians (Roth).
Thirty-ninth Annual Report. Accompanying paper: The Osage Tribe: The Rite of Vigil (La Flesche).
Bulletin 76. Archeological Investigations (Fowke).
Bulletin 77. Villages of the Algonquian, Siouan, and Caddoan Tribes west of the Mississippi (Bushnell).
Bulletin 78. Handbook of the Indians of California (Kroeber).
Bulletin 79. Blood Revenge, War, and Victory Feasts among the Jibaro Indians of Eastern Ecuador (Karsten).
Bulletin 80. Mandan and Hidatsa Music (Densmore).
Bulletin 81. Excavations in the Chama Valley, N. Mex. (Jeancon).

PUBLICATIONS OF THE ASTROPHYSICAL OBSERVATORY.

The fourth volume of the annals of the Astrophysical Observatory, covering the work of the observatory from 1913 to 1920, was issued in June, 1922.

Volume IV. Annals of the Astrophysical Observatory, by C. G. Abbot, F. E. Fowle, and L. B. Aldrich. June 24, 1922. 390 pp., 2 pls. (Publ. 2661.)

REPORT OF THE AMERICAN HISTORICAL ASSOCIATION.

The annual reports of the American Historical Association are transmitted by the association to the Secretary of the Smithsonian Institution, and are communicated to Congress under provisions of the act of incorporation of the association.

The annual report for 1917 and the annual report for 1918, volumes 1 and 2, together with the supplemental volume to this report entitled "Writings on American History," were published during the year.

The annual report for 1919, volumes 1 and 2, and the supplemental volumes to the reports for 1919 and 1920 were in press at the close of the year.

REPORT OF THE NATIONAL SOCIETY OF THE DAUGHTERS OF THE AMERICAN REVOLUTION.

The manuscript of the Twenty-fourth Annual Report of the National Society of the Daughters of the American Revolution was transmitted to Congress according to law on January 4, 1922.

THE SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION.

The Smithsonian advisory committee on printing and publication passes upon all manuscripts offered for publication by the Institution or its branches and considers all forms of routine, blanks, and such other matters as pertain to printing and publication. Eight meetings were held during the year and 100 manuscripts were acted upon.

Respectfully submitted.

W. P. TRUE,
Editor.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

16984—22——9

Volume 20, part 12. New or Noteworthy Plants from Colombia and Central America—8. By Henry Pittier.

Volume 22, part 6. Grasses of British Guiana. By A. S. Hitchcock.

Volume 24, part 1. New Plants from Guatemala and Honduras. By S. F. Blake.

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PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY.

The publications of the bureau are described in detail in Appendix 4 of this report. The editorial work of the bureau is under the direction of Mr. Stanley Searles, editor.

During the past year two annual reports, the thirty-fifth and the thirty-sixth, and three bulletins were published, as follows:

Thirty-fifth Annual Report. Accompanying paper: Ethnology of the Kwakiutl (Boas). Pts. 1 and 2. 1,481 pp.

Thirty-sixth Annual Report. Accompanying paper: The Osage Tribe: Rite of the Chiefs; Saying of the Ancient Men (La Flesche). 604 pp., 23 pls.

Bulletin 73. Early History of the Creek Indians and Their Neighbors (Swanton). 492 pp., 10 pls.

Bulletin 74. Excavation of a Site at Santiago Ahuitzotla, D. F. Mexico (Tozzer). 56 pp., 19 pls.

Bulletin 75. Northern Ute Music (Densmore). 213 pp., 16 pls.

There were in press or in preparation at the close of the year four annual reports and six bulletins, as follows:

Thirty-fourth Annual Report. Accompanying paper: A Prehistoric Island Culture Area of America (Fewkes).

Thirty-seventh Annual Report. Accompanying paper: The Winnebago Tribe (Radin).

Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guinea Indians (Roth).

Thirty-ninth Annual Report. Accompanying paper: The Osage Tribe: The Rite of Vigil (La Flesche).

Bulletin 76. Archeological Investigations (Fowke).

Bulletin 77. Villages of the Algonquian, Siouan, and Caddoan Tribes west of the Mississippi (Bushnell).

Bulletin 78. Handbook of the Indians of California (Kroeber).

Bulletin 79. Blood Revenge, War, and Victory Feasts among the Jibaro Indians of Eastern Ecuador (Karsten).

Bulletin 80. Mandan and Hidatsa Music (Densmore).

Bulletin 81. Excavations in the Chama Valley, N. Mex. (Jeancon).

PUBLICATIONS OF THE ASTROPHYSICAL OBSERVATORY.

The fourth volume of the annals of the Astrophysical Observatory, covering the work of the observatory from 1913 to 1920, was issued in June, 1922.

Volume IV. Annals of the Astrophysical Observatory, by C. G. Abbot, F. E. Fowle, and L. B. Aldrich. June 24, 1922. 390 pp., 2 pls. (Publ. 2661.)

REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1923

(Publication 2749)

WASHINGTON
GOVERNMENT PRINTING OFFICE
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THE SMITHSONIAN INSTITUTION.

JUNE 30, 1923.

ding officer ex officio.—WARREN G. HARDING, President of the United States.

ncellor.—CALVIN COOLIDGE, Vice President of the United States.

bers of the Institution:
WARREN G. HARDING, President of the United States.
CALVIN COOLIDGE, Vice President of the United States.
WILLIAM HOWARD TAFT, Chief Justice of the United States.
CHARLES EVANS HUGHES, Secretary of State.
ANDREW W. MELLON, Secretary of the Treasury.
JOHN WINGATE WEEKS, Secretary of War.
HARRY M. DAUGHERTY, Attorney General.
HARRY S. NEW, Postmaster General.
EDWIN DENBY, Secretary of the Navy.
HUBERT WORK, Secretary of the Interior.
HENRY CANTWELL WALLACE, Secretary of Agriculture.
HERBERT CLARK HOOVER, Secretary of Commerce.
JAMES JOHN DAVIS, Secretary of Labor.

ents of the Institution:
CALVIN COOLIDGE, Vice President of the United States, Chancellor.
WILLIAM HOWARD TAFT, Chief Justice of the United States.
HENRY CABOT LODGE, Member of the Senate.
A. OWSLEY STANLEY, Member of the Senate.
MEDILL MCCORMICK, Member of the Senate.
ALBERT JOHNSON, Member of the House of Representatives.
R. WALTON MOORE, Member of the House of Representatives.
GEORGE GRAY, Citizen of Delaware.
CHARLES F. CHOATE, Jr., citizen of Massachusetts.
HENRY WHITE, citizen of Maryland.
ROBERT S. BROOKINGS, citizen of Missouri.
IRWIN B. LAUGHLIN, citizen of Pennsylvania.
FREDERIC A. DELANO, citizen of the District of Columbia.

utive committee.—GEORGE GRAY, HENRY WHITE, FREDERIC A. DELANO.

etary of the Institution.—CHARLES D. WALCOTT.
sant secretary.—C. G. ABBOT.
f clerk.—HARRY W. DORSEY.
nting and disbursing agent.—W. I. ADAMS.
tor.—W. P. TRUE.
istant librarian.—PAUL BROCKETT.
perty clerk.—J. H. HILL.

NATIONAL MUSEUM.

Administrative assistant to the secretary, in charge.—W. DE C. RAVENEL.

NATIONAL GALLERY OF ART.

Director.—WILLIAM H. HOLMES.

FREER GALLERY OF ART.

Curator.—JOHN ELLERTON LODGE.

BUREAU OF AMERICAN ETHNOLOGY.

Chief.—J. WALTER FEWKES.

INTERNATIONAL EXCHANGES.

Chief clerk.—C. W. SHOEMAKER.

NATIONAL ZOOLOGICAL PARK.

Superintendent.—NED HOLLISTER.

ASTROPHYSICAL OBSERVATORY.

Director.—C. G. ABBOT.

REGIONAL BUREAU FOR THE UNITED STATES, INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

Assistant in charge.—LEONARD C. GUNNELL.

REPORT

OF THE

SECRETARY OF THE SMITHSONIAN INSTITUTION,

CHARLES D. WALCOTT,

FOR THE YEAR ENDING JUNE 30, 1923.

To the Board of Regents of the Smithsonian Institution:

GENTLEMEN: I have the honor to submit herewith the customary annual report showing the activities and condition of the Smithsonian Institution and its branches durng the fiscal year ending June 30, 1923. The first 26 pages of the report contain an account of the affairs of the Institution proper, with brief abstracts of the work carried on by the various branches of the Institution, while appendixes 1 to 10 give more detailed reports of the operations of the United States National Museum, the National Gallery of Art, the Freer Gallery of Art, the Bureau of American Ethnology, the International Exchanges, the National Zoological Park, the Astrophysical Observatory, the United States Regional Bureau of the International Catalogue of Scientific Literature, the Smithsonian Library, and of the publications of the Institution and its branches.

THE SMITHSONIAN INSTITUTION.

THE ESTABLISHMENT.

The Smithsonian Institution was created by act of Congress in 1846, according to the terms of the will of James Smithson, of England, who in 1826 bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." In receiving the property and accepting the trust Congress determined that the Federal Government was without authority to administer the trust directly, and therefore constituted an "establishment" whose statutory members are "the President, the Vice President, the Chief Justice, and the heads of the executive departments."

THE BOARD OF REGENTS.

The affairs of the Institution are administered by a Board of Regents whose membership consists of "the Vice President, the Chief Justice, three Members of the Senate, and three Members of the House of Representatives, together with six other persons other than Members of Congress, two of whom shall be resident in the City of Washington and the other four shall be inhabitants of some State, but no two of them of the same State." One of the Regents is elected chancellor by the board; in the past the selection has fallen upon the Vice President or the Chief Justice; and a suitable person is chosen by them as secretary of the Institution, who is also secretary of the Board of Regents and the executive officer directly in charge of the Institution's activities.

In regard to the personnel of the board, the following changes occurred during the year: Robert Walton Moore, Member of the House of Representatives from Virginia, was appointed a Regent by the Speaker of the House, to succeed the late Lemuel P. Padgett. Mr. Henry White was reappointed by joint resolution of Congress. Mr. Irwin B. Laughlin, of Pennsylvania, was appointed to succeed the late Dr. A. Graham Bell, and Mr. Frederic A. Delano, of the District of Columbia, to succeed Mr. John B. Henderson, who died during the year.

The roll of Regents at the close of the fiscal year was as follows: Calvin Coolidge, Vice President of the United States, Chancellor; William H. Taft, Chief Justice of the United States; Henry Cabot Lodge, Member of the Senate; A. Owsley Stanley, Member of the Senate; Medill McCormick, Member of the Senate; Albert Johnson, Member of the House of Representatives; R. Walton Moore, Member of the House of Representatives; George Gray, citizen of Delaware; Charles F. Choate, jr., citizen of Massachusetts; Henry White, citizen of Maryland; Robert S. Brookings, citizen of Missouri; Irwin B. Laughlin, citizen of Pennsylvania; and Frederic A. Delano, citizen of the District of Columbia.

GENERAL CONSIDERATIONS.

A systematic campaign was begun during the year to increase the endowment of the Institution to more adequate proportions though at the close of the year this has had no material success. It is felt that there is considerable misunderstanding throughout the country regarding the resources of the Smithsonian Institution, many persons believing that it is supported, at least to some extent, by the Government. As a matter of fact, though the Congress appropriates funds annually for the maintenance of the various bureaus which have grown up around the Institution and are administered by it, not
nt from these appropriations can be used by the Institution

or the purpose for which it was created, " the increase and
of knowledge among men."
purposes, which are carried out through research, explora-
publication, must be supported by the funds of the Institu-
or by money contributed for special purposes by the friends
stitution. As the endowed funds of the Institution, con-
f the original bequest to the Nation of James Smithson
equent gifts and bequests, amount to only a little over a mil-
ars, yielding an available annual income of approximately
rom which the administrative costs of the Institution and of
al direction of its seven branches must be paid, it will be
pparent that but little remains each year for research and
on. It is believed that if the financial situation of the
ian Institution and its excellent position for carrying on
cientific work were more fully understood, there would be
ponse to its plea for a larger endowment, and its program
ific research and exploration could then be expanded and
igorously, to the ultimate benefit of mankind.
standing event of the year was the formal opening on May
f the Freer Gallery of Art, the culmination of Mr. Charles
s splendid gift to the Nation, through the Smithsonian In-
of his unrivalled collections of American and oriental art
autiful building to house them. The opening was well
and was the cause of favorable comment in art circles
ut the country, many of the leading art journals carrying
nts of the gallery and its contents. The building is now
he public daily except Mondays.

FINANCES.

ermanent investments of the Institution consist of the
:

In the Treasury of the United States	$1,000,000

CONSOLIDATED FUND.

eous securities carried at cost of $192,770.28, either purchased or
y gift, and constituting the consolidated fund, namely:

e Railroad Co. guaranteed 4 per cent first-mortgage bonds, 2361	$42,000
Electric Illuminating Co. first-mortgage 5 per cent gold ue in 1939	10,000
Topeka & Santa Fé Railway Co. 4 per cent general mortgage ie in 1995, gift	2,000
e & Ohio Railroad Co. first consolidated mortgage 5 per cent ue in 1939, gift	2,000
& Ohio Railroad Co. 5 per cent refunding general mortgage ie in 1995, gift	5,000
d Co. 7 per cent gold bonds, due in 1944, gift	6,000
Myers Tobacco Co. 7 per cent gold bonds, due in 1944, gift	6,000

New York Central & Hudson River Railroad Co. 4 per cent gold debenture bonds, due in 1934	$4,000
Dominion of Canada 5 per cent gold bonds, due May 1, 1952	5,000
Province of Ontario debenture bonds, due in 1952	3,000
Norman P. Scala 3-year note on 140 East Capitol Street, due November 20, 1925, at 6 per cent	4,000
Northern Pacific Railway Co. refunding and improvement 5 per cent bonds, due 2047	6,000
Real estate 7 per cent trust notes on improved property in the District of Columbia, due 1925	5,000
Northern Pacific Railway Co. 6 per cent bonds, due 2047	41,500
New York Central Railroad Co. refunding and improvement 5 per cent bonds, due in 2013	10,000
Brooklyn Rapid Transit Co. 5 per cent secured gold notes (in course of adjustment)[1]	3,500
United States first Liberty loan	200
United States second Liberty loan	100
United States third Liberty loan	10,150
United States fourth Liberty loan	50
Atchison, Topeka & Santa Fe Railway Co. 5 per cent preferred stock, gift ---shares--	125
American Smelting & Refining Co. 7 per cent preferred stock, gift ---shares--	60
Baltimore & Ohio Railroad Co. 4 per cent preferred stock, gift--do----	125
California Electric Generating Co. 6 per cent preferred stock, gift ---shares--	100
Electric Bond & Share Co. 6 per cent preferred stock, gift----do----	20

The sums invested for each specific fund or securities acquired by gift are described as follows:

Fund.	United States Treasury.	Consolidated fund.	Total.
Avery fund	$14,000.00	$27,689.80	$41,689.80
Virginia Purdy Bacon fund	.....	48,300.00	48,300.00
Lucy H. Baird fund	.....	1,285.58	1,285.58
Chamberlain fund	.....	35,000.00	35,000.00
Halsted fund	500.00	.....	500.00
Hamilton fund	2,500.00	500.00	3,000.00
Caroline Henry fund	.....	1,023.00	1,023.00
Hodgkins general fund	116,000.00	37,275.00	153,275.00
Hodgkins specific fund	100,000.00	.....	100,000.00
Bruce Hughes fund	.....	11,194.76	11,194.76
Morris Loeb fund	.....	2,390.00	2,390.00
Lucy T. and George W. Poore fund	26,670.00	10,055.00	36,725.00
Addison T. Reid fund	11,000.00	4,419.00	15,419.00
Rhees fund	590.00	238.00	828.00
George K. Sanford fund	1,100.00	451.00	1,551.00
Smithson fund	727,640.00	1,429.14	729,069.14
Charles D. and Mary Vaux Walcott research fund	.....	11,520.00	11,520.00
Total	1,000,000.00	192,770.28	1,192,770.28

[1] Terms have been agreed upon for reconverting the notes of the Brooklyn Rapid Transit Co., and it is expected that the conversion will be made very soon.

Mr. B. H. Swales, honorary assistant curator, division of birds, continued his contributions during the past year for the purse of specimens for the division of birds. This year his contributions have amounted to $400.

Dr. William L. Abbott has contributed $4,000 during the past year the purpose of continuing his researches in natural history and collection of specimens in China. With the unexpended sum of 173.58, the balance remaining from the work in Australia, the al sum available for work in China has amounted to $7,173.58.

The Institution is indebted to Mr. John A. Roebling for a further tribution of $28,288.19 toward continuing researches in astrosics by aiding the solar observing stations in Chile and the ited States, and providing for publication of scientific papers, l for making meteorological investigations elsewhere.

Freer Gallery of Art.—A stock dividend of 100 per cent was dered by Parke, Davis & Co., as of record of December 18, 1922, ich gives the Smithsonian Institution a total number of shares the stock of that company aggregating 40,930, making a total for h classification as follows:

	Shares.
ator's fund, Freer Gallery of Art	3,484
rt and grounds fund, Freer Gallery of Art	3,484
rt and grounds, maintenance fund, Freer Gallery of Art	870
iduary legacy, Freer Gallery of Art	33,092

The Institution, as residuary legatee, also holds the following urities, acquired in settlement of the Freer estate:

roit Country Club, first mortgage 5 per cent bond, due January 1, 1931	$1,000
versity Club, Detroit, first mortgage 5 per cent bonds, due 1923 nd 1924	2,000
at Lakes Engineering Works, first mortgage, 7 per cent bonds, due 1928, 1929, and 1930	20,000

In my last report, I mentioned a loan which the Institution was npelled to make for the purpose of paying certain taxes. The n has been paid during the year. The building fund is now existed.

The practice of depositing on time, in local trust companies, such venues as may be spared temporarily has been continued during past year, and interest on these deposits has amounted to $1,732.50. ie income during the year for current expenses, consisting of terest on permanent investments and other miscellaneous sources, cluding cash balance at the beginning of the year, amounted to 7,484.16. Revenues and principal of funds for specific purposes, cept the Freer bequest, amounted to $69,756.48. Revenues on count of Freer bequest amounted to $304,436.26; aggregating a tal of $441,676.90.

The disbursements, described more fully in the annual report of the executive committee, were classed as follows: General objects of the Institution, $64,138.85; for specific purposes (except the Freer bequest), $44,291.25; temporary advances for field expenses, etc., in excess of repayments, $12,769.17; expenditures pertaining to the Charles L. Freer bequest, $251,446; cash deposited on time, $57,500; and cash balance on hand, June 30, 1923, $11,531.63.

The following appropriations were intrusted by Congress to the care of the Smithsonian Institution for the fiscal year 1923:

International Exchanges		$45,000
American Ethnology		44,000
International Catalogue of Scientific Literature		7,500
Astrophysical Observatory		15,500
National Museum:		
Furniture and fixtures	$20,000	
Heating and lighting	73,000	
Preservation of collections	312,620	
Building repairs	10,000	
Books	2,000	
Postage	500	
		418,120
National Gallery of Art		15,000
National Zoological Park		125,000
Increase of compensation		109,044
Printing and binding		77,400
Total		856,564

RESEARCHES AND EXPLORATIONS.

In the Institution's work in the "increase and diffusion of knowledge," scientific exploration and research expeditions in the field play an important part. There has been even more than the usual activity in this phase of the work during the past year, the Institution and its branches having initiated or taken part in 22 separate expeditions in widely scattered parts of the earth, representing many branches of science. The very limited funds of the Institution available for this important work make it necessary each year to forego opportunities to send out or join forces with other scientific organizations in expeditions which would result in valuable information and material for study and exhibition to the public in the National Museum. I will mention here only a few of the expeditions in the field during the past year, in order to show the nature and scope of the work, referring to the appended reports on the National Museum, Bureau of American Ethnology, and other branches of the Institution for accounts of the explorations undertaken by them.

GEOLOGICAL EXPLORATIONS IN THE CANADIAN ROCKIES.

ly geological field work in the Canadian Rocky Mountains, debed in previous reports, was continued during the past year, ial attention being given to securing evidence bearing on the Devonian formations north of the Bow Valley, Alberta, and h along the new Banff-Windermere motor road. Difficulties were ountered during the first part of the season, owing to dense st-fire smoke and unsatisfactory trail men, but during August September conditions were greatly improved and the work was hed vigorously.

. fine section of pre-Devonian strata was studied and measured he upper part of Douglas Lake Canyon Valley, and many phoaphs were secured. The measured geologic section was from the of the Devonian, above Lake Gwendolyn, across the canyon to deep cirque below Halstead Pass, where the great Lyell limeie forms the crest of the ridge. The section includes the Ozarkian is formation down to the Lyell formation of the upper Cambrian. oing south from the Bow Valley, camp was next made on the tenay River, about 6 miles below the mouth of the Vermilion er. The Kootenay Valley is broad and deep, with the high ges of the Mitchell Range on the east and the Brisco Range on west. The limestones and shales of both ranges are upturned and ired and faulted, making it very difficult to work out the structure the complete stratigraphic succession of the various formations. Silurian limestones, with their fossil coral beds above the white rtzite of the Richmond transgression, were found in the upper tion of Sinclair Canyon, and not far away black shales full of irian graptolites. Lower down the canyon thin bedded gray estone yielded fossils of the Mons formation.

t is evident that in the ancient and narrow Cordilleran Sea, that nded from the Arctic Ocean 2.000 miles (3,218 km.) or more th, between the coast ranges of the time and the uplands of the tral portion of the North American continent, there was a simity of Lower Paleozoic marine life along the shores and its shal- waters. Evidences of this and of strong currents and persistent ve action occur all the way from central Nevada to Mount Robson, British Columbia. The record of the marine life and deposits nud and sand is most complete.

PALEONTOLOGICAL FIELD WORK IN TENNESSEE.

Dr. R. S. Bassler, curator, division of paleontology of the United tes National Museum, spent six weeks in June and July in a conuation of stratigraphic and paleontologic studies begun a year ore in the central basin of Tennessee, in collaboration with the

Tennessee State survey. In 1921 the study and mapping of the Franklin quadrangle, an area of about 250 square miles just south of Nashville, was well advanced, and this year it was brought to completion and data secured for the preparation of a geological report upon the area, to be published by the State. Stratigraphic studies were then undertaken in contiguous areas, in which Doctor Bassler was joined by Doctors Ulrich and Mesler. The classic section at Nashville, in which the proper delimitation of the formations has long been in dispute, was studied with especial care, and large collections of fossils were secured to verify the stratigraphic results.

Regarding this section, Doctor Bassler says:

> The deep-sea origin of all limestones has long been taught in spite of the trend of evidence that many limestone formations were laid down in shallow seas. The shallow-water origin of limestone is well illustrated in the section of Ordovician strata exposed near the blind asylum at Nashville, which has been studied by several generations of geologists. At the base of this section is the Hermitage formation, which was evidently formed along ancient shore lines because it is composed of beach-worn fragments of shells and other fossils. Above this comes the Bigby limestone, the source of much of the Tennessee brown phosphate, and which also is made up almost entirely of the comminuted remains of fossils. Next is the Dove limestone, an almost pure, dove-colored, lithographic-like limestone which shows its shallow-water origin in the worm tubes penetrating it and its sun-cracked upper surface. A slab of this limestone a foot thick, now on exhibition in the National Museum, well illustrates the polygonal upper surface and the penetrating worm tubes, both features indicative of the origin of the rock on old mud flats which were periodically above water and thus became sun cracked. The succeeding Ward limestone is of the more typical blue variety, but here the rock is filled with millions of fossil shells which, under the influence of weathering, are changed to silica and are left free in great numbers in the soil. This section is only a portion of the entire geological sequence at Nashville, but it well illustrates the various types of limestone outcropping throughout the central basin.

EXPEDITION TO EXAMINE THE NORTH PACIFIC FUR SEAL ISLANDS.

Dr. Leonhard Stejneger, head curator of biology in the United States National Museum, was detailed at the request of the Department of Commerce, to accompany an expedition to Alaska and adjacent regions during the summer of 1922 to ascertain the status of the fur seal herds in the North Pacific Ocean since their protection through the treaty of 1911 between the United States, Russia, Japan, and Great Britain. The first seal rookeries visited were those of the Pribilofs, where the increase in number of seals on the beaches is very remarkable, and Doctor Stejneger predicts a complete restitution of the fur seal herd to its former maximum for the not distant future. A new method of stripping the skin from the dead seal and subsequent cleaning of the skin was being adopted on an extensive scale and was found to be a great improvement over the old method.

On Bering Island of the Commander Islands, the next stop of the expedition, conditions were quite the reverse of those on the Pribilofs. The south rookery had long since ceased to exist and the great north rookery had been greatly reduced. On his last visit to this rookery in 1879, Stejneger had estimated the number of breeding seals there at 30,000. At the time of the present visit, there were scarcely 2,000 left.

The expedition next visited the Japanese fur seal island usually known as Robben Island in the Okhotsk Sea. Here the number of fur seals has gradually increased until now they occupy not only the entire eastern beach but are extending the rookery at both ends on to the west side of the island. The Japanese have followed closely the methods employed in managing the American seal herd on the Pribilofs, and the result is most instructive in showing conclusively that "protection does protect." Important information regarding the Russian fur seal islands was obtained from Mr. Koltanovski and Colonel Sokolnikof, and from Yokohama Doctor Stejneger took passage back to the United States, having completed the inspection of the fur seal rookeries.

BOTANICAL EXPLORATION IN COLOMBIA.

From April to October, 1922, Dr. Francis W. Pennell, of the Philadelphia Academy of Natural Sciences, and Mr. Ellsworth P. Killip, of the National Museum, carried on botanical exploration in the Republic of Colombia. The expedition was organized by several institutions as part of a general plan for the botanical study of northern South America. Financial assistance was also given by Mr. Oakes Ames, who was especially interested in the orchids of the region.

Entering the country at Buenaventura on the Pacific side, the expedition established headquarters at La Cumbre in the Western Cordillera, for the purpose of studying the vegetation of the central part of this range. Descending to the city of Cali, the party proceeded up the Cauca Valley to Popayán, and from this point explored the southern portions of both the central and western Cordilleras. Later the expedition visited Salento, in the northern part of the Central Range, and Ibagué and Bogotá, collecting material at historic localities along the Quindiu Trail. Approximately 7,200 members were collected, sufficient material being secured to make up equal sets for each of the institutions represented in the expedition.

In his report on the work, Mr. Killip says:

> As might be expected from its physiography, the vegetation of Colombia is extremely diverse. Within a few miles may occur a luxuriant tropical flora, the more open woods of the temperate zone, and the low alpine growth familiar on our American mountain tops. Again, as in the Dagua Valley, one may ride through a dense rain forest, filled with ferns, mosses, and aroids, to emerge

suddenly in an arid desert-like region, where cacti and acacias are the conspicuous plants.

So inadequately known is the flora of Colombia that even along the regular routes of travel many species are found that are either new, unrepresented in American herbaria, or known only from specimens preserved in European collections.

The botanical collection resulting from this expedition is one of the largest and most important ever obtained in Colombia.

EXPLORATION OF THE PALEOLITHIC REGIONS OF FRANCE AND SPAIN.

During September, 1922, Mr. M. W. Stirling, of the National Museum, explored the paleolithic regions of southern France and northern Spain. Besides visiting all of the important sites where remains of ancient man have been discovered, the expedition entered a great many caves previously unknown to science. Regarding the great promise of the region for archeological work, Mr. Stirling reports as follows:

The idea has become prevalent in America that this region has been practically exhausted archeologically. Although the previous existence of paleolithic man in this locality has been known for half a century, it may be truly said that the work of exploration has hardly begun.

The habitations of the Stone Age are closely linked with the limestone formation which overlies large areas in this part of Europe. These may be said to fall into two classes, i. e., rock shelters and caverns. The former are undercuts in the limestone made by the rivers in the early Pleistocene or late Pliocene. A general elevation of the land has caused the streams to deepen their channels, thus leaving the undercuts well above the surface of the water. These were utilized as dwelling places by paleolithic man and in many instances were artificially modified. There are literally miles of relic-bearing deposits of this class that have not yet been touched. The possibilities in this field are very great.

The caverns of the Dordogne region are for the most part comparatively small, while those in the department of Arriege are immense caves of a most spectacular nature. Of the former class are the grottoes of Font du Gaume, Combarelles, La Mouthe, Marsoulas, Montesquieu, and others. Of the latter class are the immense caves in the neighborhood of Foix, as for example, Salignac, Ussat, and Niaux. The tunnel of Mas d'Azil is the remnant of such a cave.

Many of these caverns have become blocked with sediment owing to the fact that they frequently slope downward from the entrance. Messrs. Stirling and Patton entered at least a dozen such caves which had become sealed at varying distances from their mouths. The opening of such caves has heretofore been left entirely to chance. Scientific endeavor at this work should produce most fruitful results. The sealing of these caves has been a fortunate accident of nature, since the contents are by this means preserved intact.

Of the regions visited, that in the neighborhood of Altamira, in Spain, and Ussat, in France, give most promise of rich returns to the archeologist.

CENTENARY OF THE BIRTH OF SPENCER FULLERTON BAIRD.

A meeting was held in the auditorium of the National Museum on the evening of February 3, 1923, to celebrate the centenary of the birth of Spencer Fullerton Baird, second secretary of the Smith-

nstitution, the virtual founder of the United States National
, the creator and head of the United States Fish Commis-
d a prime mover in the establishment of the United States
:al Survey and the Bureau of American Ethnology. The
was presided over by Representative Frank L. Greene, a
of the Board of Regents of the Institution, and the following
s were delivered: "Baird, the man," by Dr. William Healey
Baird and the Smithsonian Institution and its branches,"
Charles G. Abbot; "Baird at Woods Hole," by Prof. Edwin
"Baird and the Fisheries," by Prof. David Starr Jordan;
ıird, the Naturalist," by Dr. C. Hart Merriam.
: afternoon, preceding the formal celebration, the National
lemorial Committee met in the National Museum to decide
e form of the memorial or memorials to Baird. The com-
'as composed of delegates appointed by 54 scientific societies
itutions from various parts of the country, with the follow-
ers:
:ary president, Dr. William H. Dall; president, Dr. Charles
:ott; vice presidents, Mr. George R. Agassiz, Dr. Alexander
Bell (deceased), Prof. Frank W. Clarke, Prof. Stephen
es; Prof. David Starr Jordan, Prof. Edwin Linton, Prof.
S. Morse, Prof. Henry Fairfield Osborn, Prof. Addison
:ill, and Dr. Robert S. Woodward; secretary, Dr. Paul
. At this afternoon meeting it was announced that appro-
xercises were held during the morning, when wreaths were
)n the grave of Baird in Oak Hill Cemetery, the bust of
n the American Museum of Natural History, the Baird
ıl bowlder of the American Fisheries Society at Woods
ıd the Baird memorial tablet at the Bureau of Fisheries
: in Washington, and that the mayor of Reading, Pa., had
|uested to decorate the house in which Baird was born.
eport of the national committee, announced at the evening
, is as follows:
at Congress be memorialized to establish in the city of
gton a museum of fisheries and oceanography, with labora-
ıd a public aquarium, as a memorial to Spencer Fullerton

at there be established a fund for the encouragement of
and exploration in the directions in which Spencer Fuller-
:d was a leader.
was the sense of the meeting that the name of Baird be given
ıboratory of the Bureau of Fisheries at Woods Hole, Mass.

THE BOARD OF REGENTS.

The affairs of the Institution are administered by a Board of Regents whose membership consists of "the Vice President, the Chief Justice, three Members of the Senate, and three Members of the House of Representatives, together with six other persons other than Members of Congress, two of whom shall be resident in the City of Washington and the other four shall be inhabitants of some State, but no two of them of the same State." One of the Regents is elected chancellor by the board; in the past the selection has fallen upon the Vice President or the Chief Justice; and a suitable person is chosen by them as secretary of the Institution, who is also secretary of the Board of Regents and the executive officer directly in charge of the Institution's activities.

In regard to the personnel of the board, the following changes occurred during the year: Robert Walton Moore, Member of the House of Representatives from Virginia, was appointed a Regent by the Speaker of the House, to succeed the late Lemuel P. Padgett. Mr. Henry White was reappointed by joint resolution of Congress. Mr. Irwin B. Laughlin, of Pennsylvania, was appointed to succeed the late Dr. A. Graham Bell, and Mr. Frederic A. Delano, of the District of Columbia, to succeed Mr. John B. Henderson, who died during the year.

The roll of Regents at the close of the fiscal year was as follows: Calvin Coolidge, Vice President of the United States, Chancellor; William H. Taft, Chief Justice of the United States; Henry Cabot Lodge, Member of the Senate; A. Owsley Stanley, Member of the Senate; Medill McCormick, Member of the Senate; Albert Johnson, Member of the House of Representatives; R. Walton Moore, Member of the House of Representatives; George Gray, citizen of Delaware; Charles F. Choate, jr., citizen of Massachusetts; Henry White, citizen of Maryland; Robert S. Brookings, citizen of Missouri; Irwin B. Laughlin, citizen of Pennsylvania; and Frederic A. Delano, citizen of the District of Columbia.

GENERAL CONSIDERATIONS.

A systematic campaign was begun during the year to increase the endowment of the Institution to more adequate proportions though at the close of the year this has had no material success. It is felt that there is considerable misunderstanding throughout the country regarding the resources of the Smithsonian Institution, many persons believing that it is supported, at least to some extent, by the Government. As a matter of fact, though the Congress appropriates funds annually for the maintenance of the various bureaus which have grown up around the Institution and are administered by it, not one cent from these appropriations can be used by the Institution

oper for the purpose for which it was created, " the increase and ffusion of knowledge among men."

These purposes, which are carried out through research, explora- ɔn, and publication, must be supported by the funds of the Institu- ɔn itself or by money contributed for special purposes by the friends the Institution. As the endowed funds of the Institution, con- ɪting of the original bequest to the Nation of James Smithson ɪd subsequent gifts and bequests, amount to only a little over a mil- ɔn dollars, yielding an available annual income of approximately 0,000 from which the administrative costs of the Institution and of e general direction of its seven branches must be paid, it will be adily apparent that but little remains each year for research and ploration. It is believed that if the financial situation of the nithsonian Institution and its excellent position for carrying on ɔeded scientific work were more fully understood, there would be ady response to its plea for a larger endowment, and its program ! scientific research and exploration could then be expanded and ɪshed vigorously, to the ultimate benefit of mankind.

An outstanding event of the year was the formal opening on May 1923, of the Freer Gallery of Art, the culmination of Mr. Charles . Freer's splendid gift to the Nation, through the Smithsonian In- ɪtution, of his unrivalled collections of American and oriental art ɪd a beautiful building to house them. The opening was well tended and was the cause of favorable comment in art circles ɪroughout the country, many of the leading art journals carrying ll accounts of the gallery and its contents. The building is now ɔen to the public daily except Mondays.

FINANCES.

The permanent investments of the Institution consist of the llowing:

ɔposited in the Treasury of the United States $1,000,000

CONSOLIDATED FUND.

Miscellaneous securities carried at cost of $192,770.28, either purchased or ɪuired by gift, and constituting the consolidated fund, namely:

est Shore Railroad Co. guaranteed 4 per cent first-mortgage bonds, due in 2361	$42,000
eveland Electric Illuminating Co. first-mortgage 5 per cent gold bonds, due in 1939	10,000
chison, Topeka & Santa Fé Railway Co. 4 per cent general mortgage bonds, due in 1995, gift	2,000
esapeake & Ohio Railroad Co. first consolidated mortgage 5 per cent bonds, due in 1939, gift	2,000
ltimore & Ohio Railroad Co. 5 per cent refunding general mortgage bonds, due in 1995, gift	5,000
Lorillard Co. 7 per cent gold bonds, due in 1944, gift	6,000
ggett & Myers Tobacco Co. 7 per cent gold bonds, due in 1944, gift	6,000

many lines of scientific work, including physics, chemistry, astrophysics, geology, biology, and anthropology. These are written in a style to attract the average intelligent reader, and there is a very general demand for the reports. A cataloguer in the office of the Superintendent of Documents, where all public documents are distributed, has placed the Smithsonian report first in point of number of requests from libraries to receive this publication.

The publications of the National Museum and of the Bureau of American Ethnology are mentioned in detail in the report on publications, appended hereto.

Nine papers were issued during the year in the series of Smithsonian Miscellaneous Collections, among which may be mentioned one by your secretary resulting from his geological field work in the Canadian Rocky Mountains; a timely paper by Mr. Mitman, of the Museum staff, on "Some Practical Aspects of Fuel Economy"; and a contribution from Dr. J. Walter Fewkes, chief of the Bureau of American Ethnology, on the "Designs on Prehistoric Pottery from the Mimbres Valley, New Mexico," which was fully illustrated with striking Indian designs.

Allotments for printing.—The congressional allotments for the printing of the Smithsonian reports and the various publications of the branches of the institution were practically used up at the close of the year. The appropriation for the coming year ending June 30, 1924, totals $77,400, allotted as follows:

For printing and binding the Annual Reports of the Board of Regents, with general appendixes, the editions of which shall not exceed 10,000 copies	$10,000
Under the Smithsonian Institution: For the annual reports of the National Museum, with general appendixes, and for printing labels and blanks, and for the bulletins and proceedings of the National Museum, the editions of which shall not exceed 4,000 copies, and binding, in half morocco or material not more expensive, scientific books and pamphlets presented to or acquired by the National Museum Library	37,500
For the annual reports and bulletins of the Bureau of American Ethnology, and for miscellaneous printing and binding for the bureau	21,000
For the annual report of the National Gallery of Art and for printing catalogues, labels, and blanks	1,000
For miscellaneous printing and binding:	
The International Exchanges	200
The International Catalogue of Scientific Literature	100
The National Zoological Park	300
The Astrophysical Observatory	300
For the annual report of the American Historical Association	7,000
	77,400

Provided, That the expenditure of this sum shall not be restricted to a pro rata amount in any period of the fiscal year.

ommittee on printing and publication.—The function of the thsonian advisory committee on printing and publication is to :e recommendations to the secretary regarding the technical merit suitability of all manuscripts submitted for publication by the ıthsonian Institution or its branches, and also to consider all :r matters relating to printing and binding under the institution. ·ing the past year seven meetings were held and 104 manuscripts ·d upon. The membership of the committee is as follows: Dr. nhard Stejneger, head curator of biology, National Museum, irman; Dr. George P. Merrill, head curator of geology, National seum; Dr. J. Walter Fewkes, chief, Bureau of American Eth- ɔgy; Mr. N. Hollister, superintendent, National Zoological Park; Mr. W. P. True, editor of the Smithsonian Institution, secre- y.

LIBRARY.

Much has been accomplished during the year toward better ·ary service. The number of publications loaned during the year ched a total of 12,076, and fully as many were consulted without ıg taken out. A list has been prepared each day of the principal tents of scientific and technical periodicals received for the Smith- ian Deposit at the Library of Congress, and copies are circu- ·d among the heads of scientific bureaus under the Smithsonian titution. The subject catalogue of the Museum library has been reased by 4,400 cards, and progress has been made in the arrange- nt of cards of the Concilium Bibliographicum, received since the se of the war.

The third volume of the "Bibliography of Aeronautics," covering years 1917 to 1919, inclusive, compiled by the assistant librarian the Smithsonian Institution, Mr. Paul Brockett, was issued dur- the year by the National Advisory Committee for Aeronautics. Of the 10,938 volumes and other publications added to the library, 19 were for the Smithsonian Deposit at the Library of Congress, 35 for the National Museum, and the others for the remaining ·aries administered under the Smithsonian Institution.

NATIONAL MUSEUM.

While without increased financial resources it has been impossible the Museum during the year to increase the scope of its exhibits of their usefulness to the public, nevertheless much has been omplished along the lines of filling in gaps in existing collections of increasing their value through classification and arrangement. Museum has been fortunate in being able to keep together most its scientific staff. In many cases this has been possible only use of the devotion of the persons and their willingness to accept

employment in what should be their leisure hours in order to meet living expenses. Better conditions are expected to result, however, from the passage by Congress of the reclassification act of 1923, which becomes effective July 1, 1924.

The Museum acquired during the year a total of 217,611 specimens. While numerically this is only 60 per cent as many as received during the previous year, many of the accessions are of exceptional value, either intrinsically or from a scientific point of view. The distribution of duplicate specimens, mainly to educational institutions, totaled 9,131 specimens, classified and labeled. About one half of these were in regular sets already prepared for shipment, and the other half were specially selected to meet particular needs. Nearly 35,000 duplicates, chiefly relating to botany and geology, were sent out in exchange, resulting in the acquisition of much desirable material. Over 12,000 specimens were lent to specialists for study purposes. The material received by the Museum during the year is described somewhat fully in the report of the administrative assistant in charge, appended to this report, but it may be well to here mention briefly some of the outstanding accessions. Among much material in anthropology, there may be mentioned an expressive carved stone figure from the Makah Indians; casts of the famous La Quina and Obercassel skulls and skeleton; a series of archeological specimens from Haiti; an ethnological collection from Formosa; and casts of the busts of the heretic Pharaoh, Amenophis IV, and his queen.

The biological specimens received during the year, while fewer in number, compare favorably in scientific value with those of previous years and probably are above the average. Perhaps the outstanding accession in biology was the Evezard collection of recent mollusks presented by the late John B. Henderson, while another of great scientific interest is the series of Opalinid ciliate infusorians prepared by Prof. Maynard M. Metcalf. A significant feature of the year's accessions is the fact that some of the most important are from China as a result of a deliberate effort to improve systematically the study material from the palearctic region which is of fundamental importance for a full understanding of our North American fauna. Several expeditions from which biological material may be expected to come to the Museum are now in the field in China. A number of other expeditions to South America and elsewhere during the year have resulted in much valuable material, the National Herbarium especially being enriched. Striking new exhibits in the department of biology include several species of Australian mammals, a Malay tapir, and a gorilla collected in French Congo by Mr. Aschemeier, of the Museum staff. The scientific staff has continued to carry on research work on the study collections, resulting in the publication

of many papers in the various Museum series. The total number of specimens of animals and plants now in the Museum collections is estimated to exceed 7,000,000.

Among the important accessions in the department of geology may be mentioned the valuable paleontological collection of the late Orestes St. John, consisting principally of fossil fishes, donated by Dr. Frank Springer, and a collection of not less than 10,000 specimens, mainly fossil plants, presented by the heirs of the late R. D. Lacoe, of Pittston, Pa. The residuary portion of the meteorite collection of the late Prof. H. A. Ward was presented by Mrs. Coonley Ward, and 13 additional accessions of meteorites were received. A number of important mineralogical specimens were acquired during the year, largely through exchanges, including a large boulder of jade received from Col. W. B. Thompson and a fine specimen of crystallized descloizite from southwest Africa. Several unusual cut gems were purchased through the Chamberlain endowment fund. An important phase of the work of the department of geology consists in furnishing assistance to schools and students, chiefly through the distribution of materials needed in their studies. Eighty-one educational institutions were thus aided during the year.

The collections of textiles, wood technology, organic chemistry, foods, and medicine, all under the supervision of the curator of textiles, received many valuable specimens, numbering over 2,000. Among the most important of these are a large series of specimens of pyralin, bakelite, condensite, and cellulose acetate, all substitutes for natural raw materials, such as ivory, bone, horn, tortoise shell, amber, etc., the supplies of which are growing scarcer every year; beautiful specimens of silks, woolen fabrics, and mohair upholstery textiles; an exhibit showing the process of manufacture of double-tipped matches; and specimens showing the use of chaulmoogra oil derivatives in the treatment of leprosy in Hawaii.

In the divisions of mineral and mechanical technology, graphic arts, and history, an unusually large and valuable series of objects have been accessioned during the year. The divisions of mineral and mechanical technology, in their conservation program, cooperated with Mr. S. S. Wyer in preparing a work under the title "The Smithsonian Institution's Study of Natural Resources Applied to Pennsylvania's Resources," which was distributed free to school teachers throughout Pennsylvania and used in certain courses in the grade schools. Seven loan exhibits shown in the division of graphic arts brought the division prominently before the local public, and two traveling exhibits prepared in the division were shown in various cities. The division of history received, besides several other important accessions of military, naval, and antiquarian material, the entire collection of numismatic material formerly exhibited in the

United States mint in Philadelphia, transferred to the Museum owing to the closing of the mint to the public.

A number of field expeditions in which the Museum was interested resulted in greatly enriching the collections in all departments, though mainly in biology and geology. These expeditions are described in the report on the Museum appended hereto. The usual large number of meetings, congresses, and receptions were held in the auditorium and rooms of the Natural History Building. Visitors to the Natural History Building totaled 508,518, to the Arts and Industries Building, 259,542, to the Smithsonian Building, 95,168, and to the Aircraft Building, 42,904. The Museum published during the year 10 volumes and 42 separate papers, of which there were distributed a total of 72,529 copies.

NATIONAL GALLERY OF ART.

In the National Gallery, the year has seen substantial advance in a number of directions, although additions to the art collections have not been so numerous as in several previous years. The time of the staff has been devoted largely to the receipt, installation, and care of the collections; to completing the records and labeling; and to the preparation of matter for publication for the purpose of arousing interest in the National Gallery, especially in its vital need of a gallery building. A recent act of Congress authorizes the raising of funds for a National Gallery Building and provides a site in the Smithsonian Park for its erection, and the gallery has made every effort during the year to bring forcibly to the attention of the public the urgency of providing a suitable building to take care of the growing national art collection and to offer better inducements to prospective donors to the Nation of valued art material. Furthermore, there must be in America a National Gallery of Art Building if we are to take a respectable place among the civilized nations of the world in the field of art, and the director of the gallery has endeavored in several published articles to make known this national shortcoming and to stir the pride of a people not accustomed to take a second or third place in any field worthy of their ambition.

The National Gallery Commission held its second annual meeting on December 12, and numerous important problems connected with the work of the gallery and with its future were considered. Following the reports of committees, a new committee was appointed to look after the gallery's interests in the final disposition of purchases made from the Ranger bequest fund.

The 21 portraits of distinguished leaders of America and other allied nations in the war with Germany, painted by a number of leading American painters under the auspices of the National Art

committee, have now returned to the National Gallery and will remain on permanent exhibition, after having been displayed in 25 of the larger cities through the offices of the American Federation of Arts.

The gallery received by gift during the year a number of paintings and other art works, and several interesting collections were loaned, among them the famous McFadden Collection of 43 portraits and landscapes of the British School, which is deposited in the gallery pending its permanent housing by the city of Philadelphia. Several special exhibitions were held in the gallery, including an exhibition of American Handicrafts assembled and circulated by the American Federation of Arts, and a collection of antique Etruscan, Greco-Roman, and Byzantine jewelry, ancient glassware, and pottery exhibited under the auspices of the Archæological Society of Washington.

The first catalogue of collections to be issued since the establishment of the gallery as a separate unit appeared during the year. The catalogue contains an account of the development of the art interests of the Smithsonian Institution and an outline of the organization of the gallery, followed by a list of the art works with brief biographies of the artists, and is illustrated with 25 plates of certain of the most noteworthy paintings and sculptures in the gallery.

FREER GALLERY OF ART.

The examination, classification, and preliminary cataloguing of Chinese and Japanese stone sculptures and jades, begun in 1922, was completed during the year. New work begun includes the preliminary cataloguing and final storage of Chinese and Japanese bronzes, lacquers, and wood sculptures, Near Eastern and Egyptian pottery, and miscellaneous objects of bone, ivory, metal, glass, etc. The autumn, winter, and early spring were largely devoted to the installation of exhibits and preparations for the formal opening of the gallery to the public on May 2, 1923.

For the opening week, there were issued 3,300 invitations, and the gallery was then opened to the public. From May 9 until the end of the period covered by the report of the gallery, June 30, the total attendance was 32,648. Beginning June 11, the building was closed on Mondays, making the exhibitions available on Sundays to many people who are unable to come on week days.

The field work of the gallery included a trip to Europe by Miss Guest to attend as a delegate from the gallery the meetings of the Société Asiatique de Paris, held in Paris from July 10 to 13, following which she devoted two months to a study of various collections of Oriental art in France, England and Germany. On February 12, Mr. Bishop, of the gallery staff, left for China, in charge of an ar-

cheological expedition sent out under the joint auspices of the Freer Gallery of Art and the Museum of Fine Arts, Boston. Up to the close of the year, Mr. Bishop's chief concern was with matters of organization, which he has now settled very successfully. He also visited several sites of great archeological interest and made observations of importance to the future work of the expedition.

BUREAU OF AMERICAN ETHNOLOGY.

The chief has endeavored to expend in the most economical manner the funds appropriated by Congress for "continuing ethnological researches among the American Indians and the natives of Hawaii, etc.," although considerable difficulty has been encountered owing to the greatly increased cost of field work and maintenance. There has been a great awakening of interest in matters concerning the aboriginal inhabitants of America, and never before has there been such a general demand for the published works of the bureau. The great archeological discoveries in Egypt have created a new popular interest in the Science of Man, and the chief is endeavoring to meet this situation by increasing the output of the bureau in the form of popular publications in addition to the usual technical works. The past year's work includes archeological and historical study of the Indians as well as work on documentary history. Somewhat detailed accounts of the various researches carried on during the year are contained in the report of the chief of the bureau, Appendix 4 of this report, so that it will here be necessary only to indicate the character and scope of the work.

From July to September, 1922, the chief completed the excavation and repair of Pipe Shrine House on the Mesa Verde National Park, Colorado, begun the previous year. This exceptional ruin is now open for the inspection of visitors to the park. He also excavated and repaired Far View Tower, an instructive circular ruin with three subterranean kivas, probably an outlook for observation of the sun and ceremonies connected with the sky god. In June, 1923, the chief visited various localities in the neighborhood of Deming, southern New Mexico, for the purpose of examining and obtaining specimens of a beautiful form of prehistoric Indian pottery which had been discovered in that region. The remarkable pictures on this pottery throw considerable light on the ethnology of an ancient people of whom we would otherwise have practically no knowledge.

Dr. John R. Swanton completed three manuscripts for publication during the year, besides carrying on important linguistic and ethnological researches in the office. Dr. Truman Michelson began the year conducting ethnological researches among the Fox Indians of Iowa, where he collected sufficient material for a manuscript on

gin of one of the Fox societies. Tribal dissensions cut short Michelson's stay among the Fox and he undertook a recon- ıce among the Potawatomi of Wisconsin, the Chippewa at e in the same State, the Ottawa of Michigan, the Delaware- ɔ of Lower Canada, and the Montagnais of Lake St. John. y, 1923, he left for the field to make a reconnaissance of the ıuian tribes of eastern United States and Canada, including brador peninsula.

John P. Harrington prepared several manuscripts for pub- ı during the year, and carried out linguistic researches with priano Alvarado, a Quiché Indian of Guatemala. In May, Mr. Harrington went to Santa Barbara, Calif., for the pur- f continuing his researches on the Indians of that State. He l a large quantity of manuscript material bearing on myths, ames, historical notes, early life and customs, genealogies, and songs. He also participated in the excavation of the famous ı Mound on the beach at Santa Barbara, which resulted in the ery of a great mass of Indian skeletons, trinkets, and utensils.

N. B. Hewitt completed two manuscripts for publication, May, 1923, left for ethnological field work among the Six s of Iroquois near Brantford, Ontario, Canada, where he ıted and revised texts recorded there previously and also ed much valuable information relating to the institutions of gue. Later he visited the Onondaga Reservation near Syra- N. Y. Mr. Francis La Flesche was engaged during most year in assembling his notes for the third volume of his work Osage Tribe.

report on the bureau then discusses, under special researches, ork of Miss Frances Densmore on the Indian music of the Mohave, and Papago Tribes; the archeological investigations W. E. Myer of ancient Indian mounds in central Tennessee; logical work on the Stratman cave in Maries County, Mo., . Gerard Fowke; and field studies by Mr. John L. Baer on ıner stones and pictographs in the Susquehanna River region, rlvania.

bureau published during the year two annual reports with y accompanying papers, and two bulletins. Several other ıtions were in press at the close of the year. Of the bureau there were distributed during the year a total of 17,694

INTERNATIONAL EXCHANGES.

total number of packages of scientific and governmental ıtions sent abroad and received from foreign agencies for dis- on in this country during the year was 377,826, weighing

492,816 pounds. This is a decrease in number of packages and in weight from the previous year, owing partly to the smaller size of the publications handled this year. These publications were forwarded in 2,223 boxes, in addition to which 40,000 packages were sent direct to their destinations by mail whenever a sufficient quantity for box shipments had not accumulated when the regular monthly consignments were forwarded.

Exchange relations were resumed with Roumania during the year, the Institutul Meteorologic Central at Bucharest acting as the official Roumanian exchange bureau. Conditions in Russia and Turkey had not sufficiently improved at the close of the year to warrant the establishment of official exchange bureaus in those countries, but the Institution has arranged with the American Friends Service Committee to forward to Russia the large accumulation of exchange material for correspondents in that country. Seventy boxes were thus forwarded to Russia during the year. The State Library (Riigiraamatukogu), Reval, was designated as the exchange agency for Esthonia.

There were sent to depositories abroad during the year 57 full sets of United States official documents and 38 partial sets, and the Congressional Record was exchanged with 44 establishments abroad.

NATIONAL ZOOLOGICAL PARK.

The actual number of animals on exhibition at the close of the year was greater than in any previous year, and the scientific value of the collection is greater than ever before. For the fourth successive year the number of visitors to the park has exceeded 2,000,000, and its value in natural history instruction is again shown by the fact that 171 schools, classes, and other organizations visited the park during the year, with a total of 14,185 individuals. Friends of the park have been even more than usually generous in presenting animals, 266 specimens having been thus added during the year. Of special interest among these may be mentioned a number of desirable animals presented by Mr. Victor J. Evans, including specimens of the frog-mouth and New Guinea fruit pigeon; valuable collections of South American animals contributed by Hon. Henry D. Baker and Mr. William J. LaVarre; a collection of animals presented by Mr. Gordon MacCreagh, including the rare red ouakari monkey and the matamata turtle; and a number of interesting animals from southern Mexico collected by Dr. William M. Mann.

At the close of the year there were in the collections a total of 1,768 animals, an increase of 87 over the previous year. This total represents 498 different species, including 184 species of mammals, 271 of birds, and 43 of reptiles. There were born or hatched in the park during the year 80 mammals and birds, while the death rate

in been kept at a very low mark. Sixty-six surplus mam-
ıd birds were sent away in exchange to other zoological
, which resulted in securing some very desirable specimens
park.

ıg the improvements undertaken during the year the super-
ıt's report mentions the complete reconstruction of the wolf
dens below the sea-lion pool, making the quarters for these
much more comfortable and sanitary and greatly improved
ıarance. The principal construction during the year was
inuation of the grading of the area left vacant through the
g of the main automobile road through the park. Here will
available a large area of flat ground, on which paddocks are
ompleted for Rocky Mountain goats, red deer, barasingha
ıd Japanese deer, Indian buffaloes, tahr goats, aoudads, axis
ıd similar species. The outdoor cages for rhesus and other
s were all repaired, repairs to the ostrich inclosure were
nd safety guards placed along the fence in front of the main
ns. The principal needs of the park, as enumerated by the
tendent, are a suitable restaurant building, which has been
or many years, a new bird house to replace the old temporary
ıich is far too small and in very bad condition, and the es-
nent of a reasonable fund to enable the park to grasp the
ıal opportunities offered to secure rare and desirable animals
ıherwise it is impossible to obtain.

ASTROPHYSICAL OBSERVATORY.

ɔbservatory now occupies a number of frame structures south
Smithsonian Building, at Washington; a cement observing
and frame cottage for observers on Mount Wilson, Calif.;
ırving station at Montezuma, Chile; and a new observing
on Mount Harqua Hala, Ariz.; the last erected from funds
for the purpose by Mr. John A. Roebling, of New Jersey.
ɜhington no observations were attempted, but as much time
ble was devoted to computations necessary to the following:

ıe search for systematic errors in the work of Mount Harqua Hala,
d the application of carefully determined corrections thereto.
ıe publication of a comparison of two years of observations at Mount
Hala, Ariz., and Mount Montezuma, Chile.
ıe preparation of a new set of curves for use from January 1, 1923,
ıort method of solar constant determination at Montezuma, Chile.
ıe search for systematic errors and the application of carefully de-
corrections to Montezuma results on the new basis.
ıe reductions of observations made at Mount Wilson in 1922 on the
the solar spectrum energy curve and on the spectrum energy curves
the brighter stars.

This large computing program has resulted in putting the tw stations on an equal footing in every possible way.

At Mount Wilson the director and Mr. Aldrich redetermined th form of the solar spectrum energy curve, varying the procedure a far as possible so as to get several independent checks on the results They also accomplished the difficult task of the observation of th prismatic energy spectrum of 10 of the brighter stars in the focu of the 100-inch reflector on Mount Wilson. The results of both of these researches were published in the Smithsonian Miscellaneou Collections, volume 74, No. 7, 1923.

The two observing stations at Mount Harqua Hala, Ariz., an Mount Montezuma, Chile, have continued in operation throughou the year, and the results have been very numerous. They had no been critically compared at the close of the year.

The work on solar radiation, begun in 1903, has been steadily im proved, until with the continuous year-round occupation for tw years of two first-rate observing stations the decisive test has bee made, proving the substantial character of solar variation. In short the director believes that there is no longer a reasonable doubt tha the sun varies or that the observations can reveal these variation satisfactorily. It is now a question for meteorologists whether thes variations are of importance in weather forecasting.

Just after the close of the fiscal year some preliminary observa tions were made on changes in the appearance of the sun accom panying changes in the output of radiation. Two years of recor prints from direct photographs and spectroheliograms of the su made at the Mount Wilson Solar Observatory were compared wit the corresponding two-year records of solar radiation, and ther were established four general rules or principles connecting th solar radiation with the sun's visible appearance.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LIT ERATURE.

In the report of the Regional Bureau of the International Cat logue of Scientific Literature for 1922 attention was called to a international convention to be held at Brussels during July, 192 to consider the affairs of the catalogue and to the proposals to b submitted by the Smithsonian Institution. It is satisfactory to b able to report that at this convention these proposals formed th basis of the resolution whereby all the countries represented agree to keep alive the various regional bureaus until international affai would allow reorganization and resumption of publication. The appears to be no question of the need of an international bi liography of science and of international cooperation in its pr

luction; therefore as the International Catalogue of Scientific Lit-rature is the only such organization in existence it is the logical oundation on which to base future operations, whether these opera-ions are to be aided through private endowments or official uarantees.

NECROLOGY.

ALEXANDER GRAHAM BELL.

Alexander Graham Bell, a regent of the Smithsonian Institution rom 1898 to 1922, died at his summer home in Nova Scotia on ugust 2, 1922. Doctor Bell, best known for his invention of the lephone, was born in Edinburgh, Scotland, in 1847, and was ducated at Edinburgh and London universities. He later received any honorary degrees from universities in this country and abroad. patent was granted on March 17, 1876, for his invention of the lephone, and in 1883, with C. A. Bell and Sumner Taintor, he in-nted the graphophone. His many other notable inventions for e benefit of mankind include the photophone, induction balance, d telephone probe for painless detection of bullets in the human dy.

He was deeply interested in the subject of deafness and its correc-on, and founded and endowed in 1887 the Volta Bureau for the crease of knowledge relating to the deaf. He was the author of any scientific and educational monographs.

Doctor Bell occupied a prominent place in the affairs of the mithsonian Institution during the 24 years of his membership on e board of regents, serving continuously from the time of his ppointment to the board as a member of its executive committee.

The loss of his active interest and sound advice will be deeply lt by the institution.

JOHN BROOKS HENDERSON.

John Brooks Henderson, regent of the Smithsonian Institution ice 1911, died January 4, 1923, at the age of 53. Mr. Henderson s early attracted to scientific work and shortly after his graduation om Harvard undertook his first expedition to the West Indies in est of land mollusks. These, together with marine mollusks, he de his special study, and in the course of his work he made many llecting trips to the greater and lesser Antilles. His first paper on llusks was published in 1894, and in the succeeding years his con-butions on this subject appeared in various journals and in the blications of the United States National Museum. As a result of s expeditions many thousands of valuable specimens have been ded to the museum collections.

As a regent of the institution, Mr. Henderson took a keen and active interest in all its affairs. During the year preceding his death he served on the executive committee of the board of regents.

HENRY N. SPOTTSWOOD.

Henry N. Spottswood, employed by the institution in various capacities since 1889, died on December 1, 1922. Coming to the institution as copyist in the National Museum and promoted through various grades to clerk in the international exchange service, Mr. Spottswood served the institution efficiently for over 33 years.

Respectfully submitted.

CHARLES D. WALCOTT, *Secretary.*

APPENDIX I.

PORT ON THE UNITED STATES NATIONAL MUSEUM.

ıR: I have the honor to submit the following report on the opera-
ıs of the United States National Museum for the fiscal year ending
ıe 30, 1923.

ſuch has been accomplished this year along long-established lines
endeavor. Without increased financial resources to grasp the
ıy opportunities for widening the scope of the exhibits and of
ir usefulness to the public, efforts were mainly concentrated on
ng gaps in existing collections and on increasing their value and
fulness through classification and arrangement, the two primary
ects of the Museum as given in the fundamental act. The
seum has continued, as in the past, to be greatly aided in this
k by workers in other governmental departments. For instance,
Museum pays for the services of but three persons in connection
ı the vast insect collection. However, this collection has had
ng the year most of the time of 15 entomologists and a fluctuat-
number of preparators—usually about 25 persons in all. With
ıany workers great progress has been made in studying and
nging the collection. Here, as elsewhere in the Museum, prog-
was retarded to a certain extent by lack of supplies, which the
eum is unable to furnish with its very limited maintenance fund.
he organization of the Museum has been but slightly changed.
\ugust, 1922, the old collections of animal and vegetable products
e combined in a new section of organic chemistry in the de-
ment of arts and industries, and an aid for that section was
ed to the scientific staff.

n exchange of collections was made between two divisions of the
seum on July 1, 1922, by which the division of history took over
custody of the small arms collection in the northwest court
he Arts and Industries Building, which has been built up by the
ision of mechanical technology, and the latter relieved the divi-
ı of history of the aircraft collection exhibited in the Aircraft
lding.

Great difficulty has been experienced in maintaining the quota of
chmen necessary for guarding the buildings. The conditions un-
which the watchmen are required to work here are more onerous
exacting than in any other bureau of the Government. With
funds at present available it has not been possible, especially

since the Natural History Building has been opened on Sundays, to grant the watchmen time off in lieu of Sundays and holidays. This is done in some of the Government departments and every effort is being made to secure the additional funds needed to make the watch service in the Museum as attractive as elsewhere.

The Museum has, however, been fortunate in being able to keep together most of its trained workers on the scientific staff. In a number of instances this has been possible only because of the devotion of the persons and their willingness to accept employment in what should be their leisure hours, in order to meet their current expenses. This spirit of loyalty and devotion to the Museum is appreciated.

A better era is anticipated. Nothing in the past has had a more vital relation to the work of the Museum than the enactment by Congress, on March 4, 1923, of the classification act of 1923, for a more adequate pay schedule for the civilian employees of the Government, with provisions for equal pay for equal services regardless of the department in which the service is rendered. This reclassification becomes effective on July 1, 1924, before which date much preliminary work has to be completed. The writer was appointed liaison officer for the Government bureaus under the institution. Tentative allocations of all the positions under the institution were made during the latter part of the year and submitted to the personnel classification board created to care for the matter.

The year just closed was the second under the operation of the Budget system of estimates and appropriations, and necessarily involved changes in many methods of planning and keeping accounts. Operating as it has had to do on practically the same appropriations for the past 10 or 15 years, the Museum has difficulty in making ends meet, and it is only by rigid economy and by the omission of many things that should be done that the year ends without a deficit.

The function of the National Museum as the depository of the collections belonging to the United States is being recognized more and more, resulting, near the close of the fiscal year, in the transfer to the Museum by the Treasury Department of the entire collection of numismatic materials which the Government, up to a few years ago, exhibited at the United States Mint in Philadelphia. Congress also reaffirmed this function of the Museum in accepting the sword of Maj. Gen. Richard Montgomery of the Continental Army, given to the Nation by Miss Julia Barton Hunt, by directing that it be deposited in the National Museum.

At the annual meeting of the American Association of Museums in Charleston in April, 1923, the financial prospects were such that arrangements were made for the establishment of headquarters in the National Capital, with a salaried director and secretary, Prof.

rles R. Richards and Mr. Laurence Vail Coleman, respectively.
National Museum gave support to the movement by permitting
association to have its offices in the Arts and Industries Build-

Toward the end of the year headquarters of the association
e accordingly established on the third floor of the northwest
ilion of that building. Professor Richards is spending his first
r on leave in order to make a survey of European museums, and
Coleman is in charge as acting director.

hree small rooms off the foyer in the Natural History Building,
ch have been held exclusively for use of temporary loan ex-
its—usually in connection with gatherings in the auditorium—
e this year assigned to the department of biology for the display
he animals of the District of Columbia. These collections, which
lack of room had been scattered in various halls or stored away,
now brought together and made available for students, amateurs,
school children of Washington.

n the Arts and Industries Building a new exhibition hall was
pared and opened to the public during the year, being a small
n on the second floor of the southeast range. Here is shown an
active display of historical relics received from the Military Serv-
Institution, including the famous horse owned by Gen. Phil
ridan.

BUILDINGS AND EQUIPMENT.

he National Museum, in its own buildings and in the Smithsonian
lding, occupies an aggregate floor space of over 670,000 square
, or over 15½ acres, with roof area of approximately 5¾ acres, and
e 2,000 windows. The upkeep is necessarily considerable, espe-
ly when it is recalled that the Smithsonian Building has been
ted nearly 70 years, the Arts and Industries Building about 43
rs, and the so-called South Shed about 25 years. The other
ictures are more recent, the Natural History Building being about
years old and the Aircraft Building about 6. Most of the space
sed for exhibition purposes and must at all times be kept in good
air and in sightly condition. Constant vigilance is necessary to
perly maintain these buildings within the appropriation allotted
the purpose, and it is only by strict economy that the present sat-
ctory results are accomplished.

arly in the year an emergency arose, namely, the falling of large
es of plaster from the ceiling under the dome of the rotunda in
Arts and Industries Building, which necessitated the expenditure
0 per cent of the entire appropriation provided for the mainte-
ce of the buildings.

n the Natural History Building the most extensive repairs con-
ed of painting the east and west hall attics, the watchmen's room

on the first floor, and tin gutters of roof, and the replacing of worn-out down spouts. The water table outside this building and the roadways on the south, east, and west sides of it were repaired. Measurements made this year show that the movement of the keystones of the stone arches in the rotunda has been but very slight. Observations and measurements will, however, continue to be made at intervals of a few months. The most important item in the Smithsonian Building was the repairing of a broken metal finial on top of the tower at the northwest corner of the main building.

Through the courtesy of the Commissioners of the District of Columbia and the cooperation of the fire department, the exterior walls of the Natural History Building were thoroughly washed in August, 1922, materially improving the appearance of the building. In attempting to get water for this purpose, the fire department discovered that all of the fire hydrants in the Smithsonian Park were in bad condition and of an antiquated type, leaving the buildings practically unprotected in case of fire. The District Commissioners called the attention of the Institution to the necessity of installing new hydrants and of adding to their number. An estimate to cover the installation of four new fire plugs in the Smithsonian Park was included in the estimates submitted by the Institution to the Bureau of the Budget in September, 1922. The estimate failed to receive favorable action, but will be again submitted for consideration. The fire plugs in all the buildings and the fire hose are tested regularly.

As usual, the power plant was not operated during the summer, a commercial company supplying the light and power required. While the plant was shut down the old feed-water heater, which had been in use ever since the plant was first put in operation, was replaced by a new Cochran open feed-water heater and meter, effecting a marked saving in the consumption of fuel. During the year 3,052 tons of bituminous and 15.5 tons of stove coal were consumed. Heat was supplied the buildings in the Smithsonian group, including the Freer Building, from October 9, 1922, until May 19, 1923. The total electric current generated was 376,293 kilowatt hours. The electric load was greatly increased by the opening of the Freer Building to the public, near the close of the year, so that on dark and cloudy days it is greater than can be safely carried on the cables leading into the Natural History Building from the lines of the Potomac Electric Power Co. Additional cables will have to be installed to take care of this increase. The ventilation plant in the Freer Building was operated in the usual manner during the winter and up to the time the building was opened to the public, since which time the speed of the fans has been materially increased, to provide the additional air necessary for properly ventilating the

eries. The result obtained by the system has been more satis-
ory than was anticipated. While the temperature of the gal-
es has been somewhat high on extremely hot days, the circula-
of air was sufficient to produce the necessary cooling effect in
e of the fact that no help was gained from the air washers.
he ice machine in the Natural History Building produced 279.6
of ice. The plant is gradually growing less efficient from year
ear. An item covering the purchase of a new ice machine
included in the estimates for appropriations submitted to the
eau of the Budget.

COLLECTIONS.

he total number of specimens acquired by the Museum during
year was approximately 217,611, about 60 per cent as many as
ived during the preceding year. The value of the yearly incre-
t can not, however, be appraised from numbers only. Many of
acquisitions this year are exceptionally valuable, either scien-
ally, as types and as representatives of new species and new
lities, or because of great intrinsic worth. Additional material
ne extent of 1,155 lots, mainly geological, was received during the
for special examination and report, a service of which the
tical value was demonstrated during the World War.
he distribution of duplicates, mainly to schools and colleges for
cational purposes, aggregated 9,131 specimens properly classified
labeled and 100 pounds of material suitable for blow-pipe
lysis. These distributions were about equally divided between
regular sets of specimens previously prepared for shipment and
e specially selected to meet particular needs. Nearly 35,000
licate specimens, mainly botanical and geological, were sent out
xchange, in return for which much desirable material was re-
ed. Over 12,000 specimens were lent to specialists for study on
alf of the Museum and otherwise.

nthropology.—In anthropology the more important additions
e a carved stone figure from the Makah Indians, showing a
tery of expression by the artist; casts of the La Quina and Ober-
el skulls and skeleton; a noteworthy Chinese harvest bell of gilt
nze; a superior stone collar from Porto Rico; a series of archeo-
ical specimens from Haiti; an ethnological collection from For-
sa; an ancient stone pipe from Kentucky with remarkable incised
orations; and casts of the busts of the heretic Pharaoh, Ameno-
is IV and his queen, and a statuette of the latter.

Biology.—While the number of biological specimens received dur-
the past fiscal year falls short of that of some of the previous
ars, there is no cause for alarm, as the scientific value of the col-

lections compares favorably with and probably exceeds that of the average.

No single collection stands out prominently, except perhaps the Evezard collection of recent mollusks, which was purchased and presented to the Museum by the late John B. Henderson. Another collection of great scientific interest is the series of Opalinid ciliate infusorians prepared by Professor Maynard M. Metcalf, of Oberlin, Ohio, which forms the basis of his monograph published during the year by the Museum as its Bulletin No. 120. The most significant feature of the year's accessions is the fact that some of the more important ones are from China, as a result of deliberate efforts at improving systematically the study material from the palearctic region, which is of such a fundamental importance for a full understanding of our North American fauna.

This tendency toward a more conscious development of the weak portions of our collections was made possible by the explorations now on the way in China undertaken by friends of the Museum, such as Mr. Charles M. Hoy's trip financed by Dr. W. L. Abbott, and Mr. A. de C. Sowerby's by Col. Robert S. Clark. Rev. D. C. Graham's explorations in the Province of Szechuen were also fruitful of scientifically valuable material, while an expedition recently sent into the field by the National Geographic Society under the leadership of Mr. Frederick R. Wulsin holds great promise for the future. Many important gaps in our South American collections were also filled by Dr. Hugh M. Smith as a result of his expedition to Uruguay. Dr. W. L. Abbott's visit to the Dominican Republic added materially to our botanical and herpetological series. Secretary Walcott's explorations in the Canadian Rockies, as well as Dr. Paul Bartsch's trip to the West Indies, and that of Dr. Leonhard Stejneger to the Commander Islands were also productive of desirable material. The botanical expedition to Colombia by Dr. F. W. Pennell and Mr. Ellsworth P. Killip, undertaken in cooperation with the Philadelphia Academy of Natural Sciences, the New York Botanical Garden, and the Gray Herbarium of Harvard University, brought home one of the largest and most important plant collections ever obtained in that country. Dr. William R. Maxon had not returned from Central America at the end of the fiscal year.

The Australian mammal exhibit has been further strengthened by the addition of several species, and a Malay tapir was incorporated in the oriental region exhibit. Several other large mammals were likewise mounted and placed on exhibition, among which the gorilla mounted by Brown and Aschemeier from a specimen collected by the latter a few years ago while attached to the Collins-Garner Expedition to French Congo, deserves special mention. Good progress

as made in the arrangement and cataloguing of the study series, hich are described as in excellent condition.

The research work of the staff has continued unabated and several ıportant manuscripts were brought to a close or nearly finished ıring the year. A large number of smaller papers were published ; a result of the year's work, but the great majority of the published sults date farther back, partly due to the difficulties in obtaining eedy publication, partly because their preparation extends over a eriod of years. Some very important systematic works done by ientists not members of the staff, but based on Museum material, ere published during the year as Bulletins No. 100, vol. 5, and os. 120 and 123.

Loans of specimens to scientific institutions and individual investitors have been made on the usual liberal scale. Duplicates disbuted to high schools, colleges, institutions, etc., aggregated 3,545 ecimens, of which 1,490 consisted of mollusks in 10 prepared sets d 608 fishes in 8 sets. Exchanges to the number of 28,693 were ıt out, of which 2,491 were zoological and 26,202 botanical.

The total number of specimens of animals and plants now in the tional collection is estimated to exceed 7,000,000, of which 1,150,000 : plants.

Geology.—Although accessions in the department of geology are aller in number than in the year previous, a considerable increase individual specimens and in their scientific value is to be noted.

The paleontological collection of the late Orestes St. John, consistg principally of fossil fishes, many of them types, adds material incalculable value to the specialist who may take up the study of is group, and Dr. Frank Springer who made this donation, has rned the thanks of future workers in thus placing it where it will ways be available. Another most notable accession is the residuy portion of the collection of the late R. D. Lacoe, of Pittston, Pa., esented by his heirs. This is estimated to contain not less than ,000 specimens, mainly fossil plants, with some invertebrates and rtebrates, from many localities in this and foreign countries, and om various geological horizons. Supplementing the collection is r. Lacoe's paleontological library comprising, it is estimated, at ast 2,000 volumes and an equal number of pamphlets. Mrs. Coony Ward generously donated the residuary portion of the meteorite llection of her husband, the late Prof. H. A. Ward. This is of alue not so much in adding new meteorites, as in furnishing mateal for study and exchange. Thirteen additional accessions of eteorites, mostly new to the collections, are recorded, received hiefly through exchanges.

Continued activities of Mr. Victor C. Heikes have resulted in the acquisition of the most interesting of the recent additions to the economic collections.

The division of mineralogy has benefited largely through exchanges. A most important acquisition is a portion of a large bowlder of jade received from Col. W. B. Thompson, and an unusually fine specimen of crystallized descloizite from southwest Africa, acquired through Ward's Natural Science Establishment. Other exchanges resulted in adding upward of 60 species new to the collection. Several cut gems of unusual quality and size were purchased through the Chamberlain endowment fund.

The continued acquisition of foreign paleontological material is to be noted. Chief among the contributors are Dr. E. O. Ulrich, who made collections in northern Europe; Mr. Stephen R. Capps, in Palestine; various oil companies and private collectors in Mexico, Central and South America; Mr. Edwin A. Walford, of Banbury, England; and various universities and institutions in Europe.

Research work has formed an important part of the department's activities during the year, and assistance has been furnished to numerous schools and students, chiefly through the distribution of materials needed in their studies. The records show that 81 educational institutions, chiefly high schools and small colleges, have been given such assistance.

Textiles, wood technology, organic chemistry, foods, and medicine.—The collections under the supervision of the curator of textiles, which, besides textiles, embrace wood technology, foods, organic chemistry, and medicine, were increased by many gifts and by transfer and loan of property from other Government bureaus, amounting to over 2,000 objects. The most important of these are as follows:

A large series of specimens of pyralin, bakelite, condensite, and cellulose acetate, showing the manufacture and use of these products of modern chemical industry as substitutes for such natural raw materials as ivory, bone, horn, tortoise shell, amber, etc., the supplies of which are growing scarcer every year; and a set of pneumatic bicycle tires made in 1891 and believed to belong to one of the earliest types used. There were added by gift beautiful specimens of silks, woolen fabrics, and mohair upholstery textiles contributed by American manufacturers to show the progress of textile industries in this country.

To the collections arranged to show the importance of wood and the industries based upon the use of that raw material, there were added wonderfully well preserved specimens of the ancient cypress wood brought to the surface during the excavation for the foundation and basement of the new Walker Hotel, Washington, and be-

ved to be over 30,000 years old; an exhibit showing the manufac-
·e of double-tipped matches; and another pointing out the ravages
the white pine blister rust and methods for its control.

The collections in the division of medicine were enlarged by a
·ge collection of Italian hospital supplies of the type used in the
orld War and carried as field equipment by the Italian troops;
ecimens showing the use of chaulmoogra oil derivatives in the
eatment of leprosy in the leper settlement of Molokai, Hawaii;
veral ancient surgical instruments and medical manuscripts; and
portrait in oil of Dr. Crawford W. Long.

Mineral and Mechanical Technology.—The divisions of mineral
d mechanical technology had the experience of adding more objects
their collections within the year than in any single year since
eir inception and almost wholly as a result of their own efforts.
actically every section within the divisions shared in this incre-
ent, but chiefly the sections devoted to mechanical communication,
neral mechanical engineering, coal-products industries, land trans-
rtation, and aerial transportation. The objects acquired for the
ction of communication will now make it possible to visualize the
velopments of methods of communication from those of smoke and
e to those of wireless telegraphy, with all of the essential inter-
ediate steps. To the mechanical engineering collection there was
ded a series of models made in the divisions' workshops illustrating
echanical principles and the fundamental elements and devices
ed in machines. The subject is by no means covered by this
ies, which represents simply the beginning of a new activity
ssessing valuable educational possibilities. To the coal products
lustries section there was added a model illustrating the manu-
cture of coal gas and carburetted water gas. With this addition
e divisions have covered fairly completely the fuel situation both
the home and in industry. In other sections of the divisions the
ditions to the collections tend toward a rounding out of individual
bjects. Thus there were added several models of aircraft; a loco-
otive model; a boat model, and an automobile. The electrical
gineering collections were enhanced by a working model of the
ord automobile ignition system which admirably illustrates the
inciple of induction as applied to electric current generation, a
inciple which Joseph Henry independently observed and an-
unced about the same time as the accredited discoverer, Faraday.

The divisions' cooperative educational work, particularly that with
e State of Pennsylvania, became more firmly established through
e preparation by Mr. S. S. Wyer, associate in mineral technology,
the book "The Smithsonian Institution's Study of Natural Re-
urces Applied to Pennsylvania's Resources." Copies of the book
re distributed free to school teachers throughout Pennsylvania

designated by the board of education and used in certain fitting courses of the grade schools. One of the interesting reactions resulting from this work was the assistance rendered by Mr. Wyer to the city of Erie, Pa., in an intensive educational campaign organized by the local chamber of commerce in an endeavor to conserve the city's natural gas supply, which is rapidly declining, due largely to preventable wastage.

Graphic Arts.—The 1,146 specimens assigned to this division covered a wide range, materially exceeded in number those received the preceding year, and brought the total number of specimens in the division up to 22,936. Almost the beginning and the latest development of type composition were represented in the year's accessions by a leaf of the Gutenberg Bible, one of the first books to be printed from movable type, and examples of the monotype system of composing and casting justified lines of single type. Other important acquisitions included a newspaper exhibit; specimens of bookbinding; a unitype typesetting machine; wood-block prints and etchings by Helen Hyde; 50 proofs of etchings, aquatints, wood-block prints, lithographs, etc., the gift of 24 contemporary artists; Woodville Latham's motion-picture projector of 1895; notable additions of pictorial photographic prints and color collections in photography; and many additions supplementing and completing existing exhibits.

Seven loan exhibits, five in the graphic arts halls and two in the gallery devoted to the photographic section, brought the Museum collections in these lines prominently before the local and visiting public. Two collections of pictorial photographs were lent for exhibition elsewhere and, in furthering publicity outside of Washington, two traveling exhibits of about 100 specimens each were prepared illustrating the principal processes of the graphic arts. The first of these was shown in seven different cities and the second, prepared later in the year, was exhibited only in one city.

History.—During the past fiscal year the historical collections received, in addition to the normal increase along this line, two accessions of unusual size and importance and one of unparalleled intrinsic and scientific value. The first of these includes the large aggregation of antiquarian, costume, military, naval, and miscellaneous materials collected by Mrs. Julian James during a long period for deposit in the National Museum, which by the terms of her will have now become the permanent property of the Institution. This collection has already been described in previous reports, but its permanent acquirement by the Museum is worthy of special note. The second accession of unusual significance is a large collection of historical military materials deposited in the Museum by the Military Service Institution. The collection was assembled by this

society beginning at the time of its organization in 1878, and consists for the most part of swords, guns, pistols, flags, and miscellaneous relics of the period of the Civil War, but includes also relics of the former wars in which the United States has participated. Among the most notable objects in the collection are a bronze cannon captured from the British troops commanded by Maj. Gen. John Burgoyne at Saratoga in 1777; a mortar made by D. King of Philadelphia; a sword owned by Commodore Stephen Decatur, United States Navy, and the mounted figure of the war horse of Gen. Philip H. Sheridan.

The accession of unparalleled importance is one including the entire collection of numismatic material formerly exhibited in the United States Mint in Philadelphia, which, owing to the closing of this mint to the public, was transferred to the Museum by the Treasury Department in June, 1923. This collection includes a large number of ancient coins, a fair representation of medieval European coins, a very complete aggregation of modern European coins and commemorative medals, a large collection of the temporary coins of the period of the World War, and an exceptionally fine and large collection of United States coins, medals, and paper currency. While the acquirement of this collection by the Museum is most gratifying in that it adds such an aggregation of intrinsically valuable matter to the Museum collection, the most essential fact in connection with the transaction is the basis which it offers for the future development of the collection and the encouragement of the science of numismatics in the United States.

EXPLORATIONS AND FIELD WORK.

It is hoped that the falling off in biological exploration noted in recent reports has reached its lowest ebb during the present year, and that from now on a turn of the tide may be expected. With this possibility in view plans and problems for future biological explorations and expeditions have been outlined, preparing the Museum to take the greatest possible advantage of the hoped-for improved conditions. The central idea proceeds from the fact that the early biological problems and research of the Museum naturally related to the fauna and flora of North America, especially that part opened up by the War with Mexico and the explorations for railroad lines to the Pacific coast. The necessity of working up this material was naturally paramount. With the purchase of Alaska a hitherto unexplored territory on this continent naturally attracted the attention of the National Museum, especially since the early activities in Alaska were almost exclusively investigated by the Federal Government with the result that nearly all the material collected there came to Washington. So intensive was this study of the

native fauna, especially that of the vertebrates, that within a comparatively short time North America, from a taxonomic point of view, was better explored and better known than any other part of the world, Europe itself not excepted. At the time these intensive studies began North America was regarded as one of the primary zoogeographical divisions of the world, coequal with South America, the oriental region, Africa, and the Europe-North Asian region, also known as the palearctic region. Later on considerable collections from the Pacific coasts of northern Asia and from Europe found their way into the National Museum. It was then seen that the North American fauna, at least that part which occupied the more temperate portions of the continent northward, is most closely related to the palearctic fauna of temperate Asia and northward, and it was realized that the dominant constituency of the North American fauna actually had its origin in the Old World. Here then is a whole series of closely related problems seeking solution in Asia and Europe. The circumstance that the United States Biological Survey has gradually taken over to a great extent the restricted North American field for still more refined cultivation serves to stimulate the interest of certain of the larger divisions of the National Museum in the palearctic region. The Museum has already made a good start in that direction. It has excellent collections in many lines of the palearctic fauna. Its collection of European mammals is one of the most comprehensive extant. It has excellent series of birds, reptiles, and batrachians from Japan, Korea, and Kamchatka in eastern Asia, besides a respectable representation in other classes. It has also important material collected by the Lyman-Hollister expedition to the Altai region some years ago, and the Koren-Avery expedition to the mouth of the Kolyma.

It is, therefore, with special gratification that attention is called to the work now in preparation and partly in progress for the biological exploration of China in the interest of the National Museum. The field work by Arthur de C. Sowerby, the expense of which is most generously met by Robert S. Clark, which was started in the fall of 1921, has continued during the present fiscal year, and very material additions to our vertebrate collections have already resulted.

Of equal significance is the fact that Dr. W. L. Abbott, after the return of Mr. Charles M. Hoy from Australia, decided to send him to China to collect for the Museum. Mr. Hoy departed for his new field on December 15, 1922. Thus far no collections have been received, due to difficulties of transportation and the political situation which has placed obstacles in the way of reaching the final destination, but recent letters indicate that we may soon see tangible results of his efforts.

A third expedition in China, from which the National Museum is pected to derive great benefit, is that of the National Geographic ciety, under the leadership of Mr. Frederick R. Wulsin who is eady in the field.

In this connection should be mentioned the activities of Rev. D. C. raham, who, located at Suifu in the Province of Szechuen, China, ıdertook an expedition to Mount Omei, from which the Museum re- ived very important collections, especially insects, birds, and rep- les. He is planning to make an expedition to Tatsienlu, and pos- bly to Mupin, during the present summer, both localities of great ological interest.

Dr. W. L. Abbott revisited the Dominican Republic in February nd March, 1923, continuing his biological explorations of recent ears. As his permit to collect birds was delayed until he was about o leave the country he only obtained the skin of one bird and saved ts body in alcohol. His collections of reptiles and amphibians, owever, were highly important, obtaining as he did a new species f frog, recently described by Miss Cochran as *Leptodactylus abbotti* rom the specimen collected by him. It is nearly related to the one rom Porto Rico and establishes the genus as one definitely belong- ıg to the Antillean fauna. He also collected about 600 plants in ıe southern part of the Samana Peninsula, which will doubtless ove as interesting as the previous collections obtained in the same gion by Doctor Abbott, which have yielded a large number of new ecies.

In connection with the heredity experiments conducted by Dr. ul Bartsch, under the joint auspices of the Smithsonian and Carne- Institutions, it was found desirable to add several species of rions in order to exhaust the apparent possibilities that this group sents. For that reason Doctor Bartsch visited Porto Rico in y, obtaining a large number of specimens of the desired Cerion, well as a large series of additional species. About 15,000 speci- ns were added to the Museum collection as the result of the trip.

Dr. Hugh M. Smith, associate curator in zoology, spent several nths in South America, primarily for the study of the fur-seal d other fisheries of Uruguay, during which time he made extensive llections for the Museum in all branches, especially fishes, reptiles, d marine invertebrates. He sailed from New York on September , 1922, returning in January, 1923. The opportunity to collect Brazil when the steamer stopped was improved, but the main llections were made in Uruguay, especially at the Lobos Islands. he collections form a most welcome addition to the Museum series, hich were very deficient in material from the region visited.

During the spring of 1923 Mr. C. R. Aschemeier, one of the taxi- rmists, was given permission to accompany Mr. A. H. Fisher on an

expedition to the lower Amazon River, Brazil, the understanding being that Mr. Aschemeier should devote his time to making collections of the vertebrates for the National Museum, with particular reference to river dolphins and seacows. He left New York late in April and no collections have been received as yet.

Dr. William M. Mann, assistant custodian, section of Hymenoptera, undertook for the Department of Agriculture a trip to Mexico between January 19 and June 7, 1923, for the purpose of collecting and studying certain fruit flies. As far as possible general collections of insects were made and some reptiles and a few ethnological specimens secured. The material has not as yet been accessioned, but enough is known of it to prove its value, although owing to the extreme dryness of the season collecting was very poor. From Nogales he went down the west coast of Mexico as far as Tepic, making a 10-day side trip to Lower California in the district between Loreto and Comondu. Afterwards the States of Jalisco and Colima were visited and then a rather hurried trip was made to the Isthmus of Tehuantepec and in Chiapas as far as Tapachula. He returned by way of Laredo, Tex.

Secretary Charles D. Walcott's expedition to the Canadian Rockies was productive of valuable additions to the mammal collection, as already mentioned.

The botanical explorations during the year have added materially to the collections of the National Herbarium. Dr. W. L. Abbott's visit to the Dominican Republic has already been mentioned.

Mrs. Agnes Chase visited Europe from March until July, 1922, for the purpose of studying the grass collections in the herbaria at Vienna, Munich, Florence, Pisa, Geneva, Berlin, Leiden, Brussels, Paris, and London, and many type specimens of American grasses were examined. A large number of valuable specimens of grasses also was obtained for deposit in the National Herbarium, including fragments of many types and duplicates of early South American collections.

Dr. William R. Maxon, associate curator of the division of plants, left Washington in May, 1923, accompanying a party directed by Mr. O. F. Cook, of the United States Department of Agriculture, whose purpose is to investigate the rubber resources of Central America. At the time of preparation of this report the party was in Panama and it was expected that two months additional would be spent in Central America.

Dr. A. S. Hitchcock, custodian of the grass herbarium, left Washington in May, 1923, with the expectation of spending six months in Bolivia, Ecuador, and Peru, where he intends to devote particular attention to the study of grasses, but will also make collections of other groups of plants. The expedition is supported jointly by the

States Department of Agriculture, New York Botanical
ı, and Gray Herbarium.

Charles E. Resser, under the auspices of the United States
ical Survey, accompanied Dr. E. O. Ulrich in an investiga-
: the Cambrian and Ordovician rocks of the Valley of Vir-
luring May, 1923, and secured important stratigraphic col-
s. Dr. Ulrich with his assistant, Mr. R. D. Mesler, continued
searches during the month of June, studying various sections
Appalachian Valley in eastern Tennessee. During his trip
International Geological Congress at Brussels in the summer
2, Doctor Ulrich visited important Paleozoic localities in va-
European countries and presented to the Museum all of the
al collected.

le traveling in Europe in the summer of 1922, Miss Jessie G.
was detailed to study collections in various museums, and to
t with European scientists regarding matters of interest to the
m. Miss Beach visited museums in France, Italy, Germany,
m, England, and Scotland, listing and sketching various type
ens of unusual interest, and studying methods of installation
oeling.

C. W. Gilmore, under the auspices of the Museum, made a
Roy, N. Mex., to investigate a reported discovery of *elephas*
ıs. The specimen proved to be valueless for museum purposes,
om that standpoint the trip was a failure. Mr. N. H. Boss
several short collecting trips to the Miocene deposits along
oeake Bay in search of fossil remains. As in previous years
rips were productive in the recovery of well preserved ceta-
emains.

in the fiscal year Mr. Gilmore and Mr. Boss were detailed to
te remains of dinosaurs in the Dinosaur National Monument,
an undertaking which has long been awaiting a favorable op-
ıity for its consummation.

stant curators Foshag and Shannon on their own initiative
a brief trip to old copper mines in Carroll County, Md., a
t which despite its proximity to Washington was practically
esented in the collections. A large suite of copper and iron
ıd associations was secured. A day was likewise spent at the
e quarry near Belmont Park, Va. So much material of interest
und that Mr. Shannon conducted the Washington Mineralogical
y over the ground on their annual field trip. The specimens
ed have been turned over to the Museum. The limestone quarry
sburg, Va., was also visited and interesting mineralogical mate-
cured.

estigations by Miss Frances Densmore among the Yuma In-
of Arizona and *some tribes* in northern Mexico for the Bureau

of American Ethnology brought to the Museum a collection of desirable ethnologica.

The third year of the exploration of ancient Pueblo Bonito, to which the National Geographic Society has devoted $75,000, under Neil M. Judd, the curator of American archeology, was productive of a number of specimens now deposited in the Museum. The journeys of Dr. Aleš Hrdlička to Brazil and Europe resulted in enriching the collections of the division of physical anthropology. In June Mr. Matthew W. Stirling, of the division of ethnology, carried on an exploration of several ancient villages at Mobridge, S. Dak., and collected a valuable series of material for the Museum.

For several other important expeditions in which the Museum was interested see under Researches and Explorations in the report of the secretary, page 6.

MEETINGS, CONGRESSES, AND RECEPTIONS.

The auditorium and adjacent council rooms afforded accommodations during the year for 145 meetings, covering a wide range of subjects. An innovation this year was a series of free Sunday afternoon lectures arranged by the Woman's Welfare Association. Heretofore the auditorium has not been used on that day.

The governmental agencies taking advantage of the meeting accommodations, besides, of course, the Smithsonian Institution and its branches, included the Budget Bureau and the Public Health Service of the Treasury Department; the War Department and its Army Medical School; the Women's Bureau of the Department of Labor; the Bureau of Entomology, the Forest Service, and the Federal Horticultural Board of the Department of Agriculture. The scientific and other groups included the National Academy of Sciences, the National Association of Postmasters of the United States, the National Committee on Prisons and Prison Labor, the National Association of Travelers Aid Societies, the National Conference of Social Work, the National Consumers' League, National Amateur Athletic Federation of America, the National Medical Association, the National Baird Memorial Committee, the Garden Club of America, the Girl Scouts, World's Dairy Congress Association, the American Association of Museums, Women's Welfare Association, the American Horticultural Society, the Anthropological Society of Washington, the Archaeological Society of Washington, the Art and Archaeological League of Washington, the Audubon Society of the District of Columbia, the Washington (D. C.) Chapter of the Wild Flower Preservation Society of America, the Entomological Society of Washington, the Federal Photographic Society, the Shakespeare Society of Washington, the School of Foreign Service of Georgetown University, the American University, Howard

University, the Garden Club of Washington, the Southern Society of Washington, and the Reserve Officers' Association of the District of Columbia.

At the Twentieth International Congress of Americanists at Rio de Janeiro, Brazil, August 20 to September 3, 1922, the Institution was represented by Dr. Walter Hough, head curator of anthropology in the Museum, and Dr. Aleš Hrdlička, curator of physical anthropology in the Museum, who served also as delegates on the part of the United States Government. Another member of the Museum staff, Dr. E. O. Ulrich, associate in paleontology, represented the Institution at the Thirteenth International Geological Congress meeting in Brussels, Belgium, August 10 to 19, 1922. The Museum was also represented at the eighteenth annual meeting of the American Association of Museums, held in Charleston, S. C., April 4 to 7, Mr. F. L. Lewton and the writer serving as delegates.

The Museum was the scene of several receptions. On the evening of December 19 the halls of the Museum assigned to the National Gallery of Art were opened for a reception following a lecture in the auditorium under the auspices of the Anthropological Society of Washington and the Archaeological Society of Washington. Opportunity was thus afforded for inspecting the collection of Chihuahua pottery belonging to the latter society. On January 9 the Archaeological Society and the Art and Archaeological League of Washington held a reception in the National Gallery of Art following an evening lecture by Count Byron Kuhn de Prorok, with a first view of a rare collection of antique jewelry recently lent to the society by one of its members, Mr. Kurt Walter Bachstitz, of The Hague. Another large reception was that to the National Academy of Sciences on the evening of April 23, in honor of Dr. W. W. Campbell. This followed a lecture in the auditorium by Doctor Campbell.

The exhibition halls on the first floor of the Natural History Building were the setting for a conversazione on the evening of February 3, as a part of the program in celebration of the centenary of the birth of Spencer Fullerton Baird, the second secretary of the Smithsonian Institution. The Marine Band furnished music during the evening. A meeting of Girl Scout leaders in the auditorium on the evening of April 25 was the occasion for opening all the exhibition halls in the building from 6.30 to 11 p. m. to enable the Girl Scouts, their leaders, parents, and friends to view the collections.

MISCELLANEOUS.

The number of visitors to the Natural History Building during the year aggregated 508,518; to the Arts and Industries Building, 259,542; to the Smithsonian Building, 95,168; and to the Aircraft Building, 42,904. The national collections in the Natural History

Building are accessible to the public every day in the year, Sundays as well as week days. Owing, however, to the limited appropriations for the maintenance of the Museum, the other buildings are not open on Sundays.

The Museum published during the year 10 volumes and 42 separate papers. The former comprised the Annual Report of the Museum for 1922; volumes 60 and 61 of the Proceedings; Bulletin 100, volume 5; Bulletins 120, 121, 122, 123, 124, and 126. The separates included 1 bulletin article; 4 papers in the series, Contributions from the United States National Herbarium; 5 papers from volume 61, 21 papers from volume 62, and 11 papers from volume 63 of the Proceedings. The distribution of volumes and separates to libraries and individuals on the regular mailing list aggregating 63,869 copies besides 8,660 copies supplied in response to special applications.

The Museum library, as one of the libraries administered under the direction of the Smithsonian Institution, enjoys the close cooperation of its associated libraries and in turn contributes substantially toward the general library activities. Much has been accomplished during the year toward better library service. The long-needed subject catalogue has been started, and at the close of the year 4,400 cards had been made and arranged. The arrangement of cards from the Concilium Bibliographicum distributed since the World War, is well under way, and progress is being made in the reclassification and shelving of the technological collections. Work has, however, suffered from a lack of funds for binding and renovating and from a vacancy in the staff during eight months of the year. The receipts for the year numbered 1,489 volumes and 2,796 pamphlets, bringing up the total of books and other material in the library to 160,560 titles. The number of loans made was 9,220, of which 5,191 were to the sectional libraries.

The death of John B. Henderson, a Regent of the Smithsonian Institution, on January 4, 1923, deprived the Museum of a valued friend, a constant contributor, and an indefatigable worker on its collections. The members of the scientific staff and other employees of the Museum and Institution gathered in the auditorium on January 8, 1923, to pay respect to their colleague and adopted resolutions expressing their deep sense of loss. Doctor Walcott presided and brief addresses were made by Doctor Walcott, Dr. W. H. Dall, Dr. Leonhard Stejneger, and Dr. Paul Bartsch.

Respectfully submitted.

W. DE C. RAVENEL,
Administrative Assistant to the Secretary in charge,
United States National Museum.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 2.

REPORT ON THE NATIONAL GALLERY OF ART.

SIR: I have the honor to submit herewith the report on the activi-
s of the National Gallery of Art for the fiscal year ending June
1923.

The third year of the existence of the National Gallery as a sep-
ate administrative unit of the Smithsonian Institution has wit-
ssed substantial advance in a number of directions, although addi-
ns to the art collections have fallen below those of several pre-
ous years. The activities of the gallery continued in most respects
directions corresponding with those of the two preceding years,
e energies of the limited staff being devoted largely to the receipt,
stallation, and care of the collections; to completing the records
d labeling; and to the preparation and publication of matter in-
nded to aid in awakening an interest in the welfare of the gallery,
d more especially in making known the vital importance of a
llery building.

An illustrated lecture prepared by the director, with the purpose
making the gallery and its needs better known to the public, has
en widely presented. One copy with 75 lantern views, illustrating
e gallery's collections, is in the hands of Mrs. J. W. Summers, of
'alla Walla, Wash., who has associated with her Mrs. Henry
sterman, and has been utilized largely under the auspices of the
ederation of Women's Clubs, principally in the State of Wash-
gton. A second copy (with seven additional slides), intrusted to
iss Leila Mechlin, secretary of the American Federation of Arts
d utilized under the auspices of that important organization, is
ing very generally presented in the smaller cities and towns of the
nited States; and a third copy (with 82 slides), placed in the
nds of Mrs. Rose V. S. Berry, chairman of the fine arts depart-
ent of the Federation of Women's Clubs, is being featured at the
etings of that club throughout the country.

A recent act of Congress authorizes the raising of funds for the
ection of a national gallery building in the following language:
The Regents of the Smithsonian Institution are authorized to pre-
re preliminary plans for a suitable fireproof building with granite
onts for the National Gallery of Art, including the National Por-
ait Gallery and the history collections of the United States National
useum, said building to be erected when funds from gifts or

bequests are in the possession of the said Regents, in sections or completely on the north side of the Mall between the Natural History Building, United States National Museum, and Seventh Street, leaving a space between it and the latter of not less than one hundred feet and a space of not less than one hundred feet between it and Seventh Street, with its south front on a line with the south front of the said Natural History Building."

A two-page leaflet on the national gallery has been issued, which, like the recent leaflets on the Smithsonian Institution, is to have a wide distribution. It is intended to bring forcibly to the attention of the public the great need for a separate building to house the national art collections.

Detailed information regarding the growth of the gallery within the institution and as a feature of the United States National Museum, may be found in Bulletin 70 of the National Museum, and its subsequent activities are recorded in the annual reports of the institution and museum, and in the annual reports of the gallery for the years 1921 and 1922.

In two articles prepared by the director and published in art journals during the year, attention is called to the growth of the national gallery and to the great need for a gallery building. The first, under the title "The Story of the National Gallery of Art," appeared in Art and Archeology for June, 1923. The story of the National Gallery of Art from its beginning nearly a century ago is the record of the prolonged struggle of the art idea for national recognition, for a place in the serious consideration of the American people, and it is to be regretted that to-day, although art institutions are springing up on all hands, art has slight national recognition beyond the attention necessary to the care and display of the art treasures acquired by gift and bequest. For nearly a century the Smithsonian Institution has harbored the dream of a gallery of art, but art has been in the shadow of diversified scientific activities and in the deeper shadow of the all-absorbing material interests of a rapidly developing Nation. To-day the conditions are far from satisfactory. Growth of the collections through gratuitous contributions, even, is embarrassed by the almost complete exhaustion of space for the reception and display of all save accessions of very limited extent, and the problem before the institution, and certainly with equal insistence before the American people, is "Shall America have a National Gallery of Art, or a National Museum of Art, that will give us a respectable place among the cultured nations of the world?" The story of the vicissitudes of the incipient, struggling national gallery is here presented with the view of making known a great national shortcoming and stirring the pride of a people not

ıstomed to take a second or a third place in any field worthy of r ambition.

'he second, with the title "Shall America Have a National lery of Art?" was published in The American Magazine of for July, 1923. This article is a plea for recognition of the ms of the incipient national gallery upon the American people l seeks to determine and enlist the agencies that may be brought ɔear upon the erection of a gallery building.

'he great importance of prompt action becomes apparent when s recalled that the failure to provide housing for possible adions to the national collections means a great annual loss to the ional gallery—to the Nation. The yearly addition of art works ween 1905, and 1920, the latter the date of the complete exıstion of gallery space in Museum buildings, averaged upward half a million a year, while the entire increase per year for the ee years since the latter date has fallen below $40,000. The loss he gallery and to the Nation at this rate, would, in a score of rs, amount to a sum equal to the erection of a building worthy he name, and there can be little doubt that if a gallery building thy of the name awaited the inflow of gifts and bequests, essions would reach the substantial figure of half a million per r, as heretofore, or who shall say not twice that figure? Private ıers, seeking a final resting place for their treasures, would btless, in many cases, prefer to be represented in a gallery beging to the Nation, to all the people alike, than in any other. plea then, the plea of the Smithsonian Institution, is not only orthy but an urgent one, and is now made to all the people of Nation, and for all the people of the Nation.

THE GALLERY COMMISSION.

n 1921 the Regents of the Institution organized a commission ch should devote its attention to the promotion of the gallery's rests in various directions, and the second annual meeting of commission was held in the Regents' room of the Institution December 12, 1922. The members present were: Daniel Chester nch, chairman; W. K. Bixby; William H. Holmes, secretary fficio; Gari Melchers; Charles Moore; James Parmelee; Edward Redfield; Charles D. Walcott, ex officio. At this meeting ıerous important problems were considered and steps were taken nlist national interest in the gallery and its development as an spensable national institution.

he report of the secretary of the commission for the year was ɔwed by reports of the standing, special, and subcommittees. ɛntion was given to the previously much-discussed project of an

important exhibition of portraits, official and lay, to be held in the gallery, but satisfactory arrangements for holding the exhibit in 1923 could not be made. The question of appealing to Congress for a building for art and history was considered and discussion took place as to the feasibility of having the building project included in the program being formulated by Congress for prospective public buildings. Secretary Walcott brought to the attention of commission the question of the advisability of an appeal to American institutions and to the American people for aid in the building project. Following a discussion of the Ranger bequest fund and its administration, the commission appointed a committee of three—Messrs. E. W. Redfield, Gari Melchers, W. H. Holmes—to look after the gallery's interests in the final disposition of the purchases made from this fund by the National Academy of Design.

With this meeting, the initial one year terms of three members of the commission—Herbert Adams, Gari Melchers, Charles Moore—expired, and the Board of Regents at its annual meeting, January 12, 1922, elected these persons to succeed themselves for the full term of four years.

The art advisory committee appointed at the last meeting of the Board of Regents, examined the several paintings and other works offered to the gallery as permanent accessions. The following were accepted:

"Signing of the Treaty of Ghent," an oil painting by Sir A. Forestier, 1914. Presented by the Sulgrave Institution.

A cameo-cutter's outfit, consisting of wheel, dies, tools, etc., which formerly belonged to and was used by Louis Bonet, an engraver on fine stone. Presented by Paul W. Bartlett.

THE NATIONAL PORTRAIT COLLECTION.

As announced in the report for last year, a number of influential citizens desiring to preserve some pictorial record of the World War, organized a National Art Committee immediately after the close of the War, and arranged with a number of our leading artists to paint portraits of certain distinguished leaders of America and other allied nations in the war with Germany. The members of the committee as organized are: Hon. Henry White (chairman); Herbert L. Pratt (secretary and treasurer); Mrs. W. H. Crocker, Robert W. de Forest, Abram Garfield, Mrs. E. H. Harriman, Arthur W. Meeker, J. Pierpont Morgan, Charles P. Taft, Charles D. Walcott, and Henry C. Frick (since deceased).

Under this arrangement, 21 portraits were painted and assembled in the national gallery during the month of May, 1921. Later these were turned over to the American Federation of Arts for purposes of public exhibition. Before their final return to their place in the national portrait gallery, they were exhibited as follows:

ence, R. I_____ Rhode Island School of Design.
elphia, Pa_____ Pennsylvania Academy.
ngton, D. C_____ National Gallery of Art.
ton, N. J_____ Princeton University.
laven, Conn_____ Yale University.
, Mass_____ Boston Museum.

ster, N. Y_____ Memorial Art Gallery.
and, Ohio_____ Cleveland Museum.
mstown, Mass_____ Williams College.
st, Mass_____ Amherst College.
o, N. Y_____ The Buffalo Fine Arts Academy.
nati, Ohio_____ Cincinnati Museum.
apolis, Ind_____ John Herron Art Institute.
rgh, Pa_____ Carnegie Institute.
t, Mich_____ Detroit Museum.
stown, Ohio_____ The Butler Art Institute.
is, Tenn_____ Brooks Memorial Art Gallery.
uis, Mo_____ City Art Museum.

Rapids, Mich_____ The Grand Rapids Public Library.
rbor, Mich_____ The Ann Arbor Art Association.
a, Kans_____ Art Department, Washburn College.
n, Wis_____ The Madison Art Association.
rancisco, Calif_____ San Francisco Museum.
nento, Calif_____ Kingsley Art Club.
ore, Md_____ Baltimore Museum of Art.

he gift of these portraits might be distinctly national in , it was decided that a group of two or more, financed by artrons of any city, should be inscribed as presented to the y that city and that a representative of that city should be- honorary member of the National Art Committee. It was ecided that a tablet or other permanent record in the gallery ar the names of the National Art Committee, including the of all local committees, and that there should be a record me of each subscriber to the purchase fund.

ies which, to date, have made presentations are as follows:

ortraits by John C. Johansen, N. A. (1876–):

Marshal Sir Douglas Haig, commander in chief of the British Army he Western Front, 1915–1919.

al Joseph Joffre, commander in chief of the French Armies, 1915– . O. M. 1919.

l Amando Diaz, commander in chief of the Italian Armies, – .

—Portraits by Douglas Volk, N. A. (1856–):

lajesty Albert I (Leopold-Clement-Marie-Meinrad), King of the ians, 1909– , and commander in chief of the Belgian Armies.

Honorable David Lloyd George, Prime Minister and First Lord ie Treasury of Great Britain, 1916–1922.

l John Joseph Pershing, commander in chief of the American Ex- tionary Forces in Europe, 1917–1919.

New York—Portraits by Edmund C. Tarbell, N. A. (1862–):
Woodrow Wilson, President of the United States, 1913–1921.
General Georges Leman (Gerard Mathieu Joseph Georges), commander of the fortified town of Liege (its defender in 1914).
Marshal Ferdinand Foch, commander in chief of the French Armies, 1917– ; of the Allied Forces, 1918– .
"Signing of the Peace Treaty, June 28, 1919," by John C. Johansen, N. A.
San Francisco—Portraits by Cecilia Beaux, N. A.:
Cardinal Desiré Joseph Mercier, Archbishop of Malines, 1906– .
Admiral Sir David Beatty, commander of the fleet and First Sea Lord of Great Britain, created First Earl Beatty, 1919.
Georges Clemenceau (Georges Eugene Benjamin), President, Council of Ministers of the French Republic, Prime Minister and Minister of War of France, 1917–1920.

The following portraits are still available for presentation by other cities. In case offers are not made it is assumed that the committee remains responsible for their final disposition:

Joan J. C. Bratiano (Bratianu), Prime Minister of Roumania and delegate to the Peace Conference, 1919, by Charles Hopkinson.
Nikola Pashich (Pasic), Prime Minister of Serbia and delegate from Yugoslavia to the Peace Conference, 1919, by Charles Hopkinson.
Prince Kimmochi Saionji, delegate from Japan to the Peace Conference at Paris, 1919, by Charles Hopkinson.
Right Honorable Sir Robert Laird Borden, Prime Minister of Canada, 1911–1920, by Joseph de Camp.
General Sir Arthur William Currie, commander of the Canadian Forces in France, 1917–1919, by Joseph de Camp.
Admiral William Snowden Simms, commander of the American naval operations in European waters, 1917–1919, by Irving R. Wiles, N. A.
Herbert Clark Hoover, United States Food Administrator, 1917–1919; chairman of the Supreme Economic Council, Paris, 1919.
Vittorio Emanuele Orlando, president of the Council of Ministers of Italy, 1917–1919.

The collection of 21 portraits was returned to the gallery by the American Federation of Arts on June 12, 1923, and was hung in the central hall of the ground floor in direct connection with the great body of exhibits pertaining to the war with Germany. On its return to Washington the collection was enriched by the three-quarter length portrait of Her Majesty Elizabeth, Queen of the Belgians, by Jean McLean (Mrs. John C. Johansen), the completion of which had been delayed.

ART WORKS ADDED DURING THE YEAR.

GIFTS AND BEQUESTS.

Portrait of Miss Elizabeth Ellery Burge, by Thomas Mathewson, and portarit of Miss Jessie Jay Burge, by Abbott Handerson Thayer 1849–1921). "Permanent loan" (stipulated term), from the Misses Marie Louise and Jessie Jay Burge, of Warsaw, N. Y.

Two oil paintings: "Une Brave" and "An Alsatian Girl," by Miss Lucie Louise Fery. Bequest of the artist, through Mr. George H. Moffett, executor, Charleston, S. C.

"Wharf Scene" (oil), by Bertha E. Perrie. Gift of Miss Maude Burr Morris, Washington, D. C.

Mantel of carved white holly wood, with fireplace of pink Numidian marble, from the recently demolished residence of the late Benjamin H. Warder, 1515 K Street, Washington, D. C., Henry Hobson Richardson, architect (1838–1886). Gift of William White Wilson Parker, of Washington, D. C., and Mifflintown, Pa.

"Roosevelt Haunts, Early Autumn" (oil), by Emile Walters (1893–); awarded the William O. Goodman prize by the Art Institute of Chicago, 1921. Presented by an art collector, through Mr. A. Lawrence Kocher, the Pennsylvania State College.

A list of the portraits presented by various cities through the National Art Committee, Hon. Henry White, chairman, to the National Portrait Gallery is given on page 49.

Portraits deposited by the National Art Committee and available for presentation by other cities are listed on page 50.

A Chinese carved ivory screen and 141 pieces of antique and modern porcelain, made in Saxony, Austria, Denmark, Holland, Germany, France, and Great Britain between 1790 and 1860, were added to his collection by the Rev. Alfred Duane Pell, D. D., of New York.

DEPOSIT BY THE SMITHSONIAN INSTITUTION.

Bronze bust of Jeanne d'Arc, by Madame Berthe Girardet, gold medalist, Neuilly, France. Gift of Madame Girardet, the sculptor, through Mrs. John Jacob Hoff (Mrs. Grace Whitney Hoff), "to the American people in memory of what our soldier boys have done in France at a crucial time of need." Accepted by the Smithsonian Institution for deposit in the gallery.

The collection of 22 framed individual portraits and portrait groups in pastel, 70 portraits in all, of Federal and Confederate Veterans of the Civil War, painted by Walter Beck (1864–), 50 years after the battle of Appomattox, lent to the Smithsonian Institution on May 1, 1922, for a period of one year, through the agency of Mr. Walter Grant, became the property of the Nation by gift of the artist at the expiration of the year, "to be cared for by the National Gallery of Art." A complete list of these portraits was given in last year's report.

Portrait in oil of Edwin McMasters Stanton (1814–1859), Secretary of War under President Lincoln's administration, by Henry Ulke (1821–1910). Presented to the institution by his granddaughter, Miss Sophy Stanton.

LOANS.

The John Howard McFadden collection of 43 portraits and landscapes of the British school, left in trust to the city of Philadelphia; lent to the gallery by the trustees of the collection, Chief Justice Robert Von Moschzisker, of the Pennsylvania Supreme Court, Hon. George Wharton Pepper, United States Senator from Pennsylvania, and Justice Jasper Yates Brinton, court of appeals, mixed tribunals of Egypt. The will of Mr. McFadden directs that the trustees shall, pending the permanent housing of the collection by the city of Philadelphia, intrust the works to the Metropolitan Museum in New York or to a gallery of equal dignity. A catalogue of the McFadden collection, prepared by Harvey M. Watts, was published by the J. B. Lippincott Co. during the year. The artists represented, with titles of the paintings received, are as follows:

Richard Parks Bonington (1801–1828).
A Coast Scene, Normandy.
John Constable, R. A. (1776–1837).
The Lock.
Hampstead Heath: Storm Coming Up.
The Dell in Helmingham Park.
David Cox (1783–1859).
Going to the Hayfield, 1849.
John Crome ("Old Crome") (1769–1821).
Blacksmith Shop, near Hingham, Norfolk.
Woody Landscape, at Colney.
Thomas Gainsborough, R. A. (1727–1788).
Henrietta, Lady Rodney.
A Classical Landscape.
George Henry Harlow (1787–1819).
The Misses Leader.
The Leader Children.
Mrs. Weddell and Children.
William Hogarth (1697–1764).
The Assembly at Wanstead House.
The Fountaine Family.
John Hoppner, R. A. (1758–1810).
Mrs. Hoppner.
Sir Thomas Lawrence, P. R. A. (1769–1830).
Miss West (Afterwards Mrs. William Woodgate).
John Linnell, Sen. (1792–1882).
The Refuge (or, The Storm), 1853.
George Morland (1763–1804).
Old Coaching Days.
The Fruits of Early Industry.
The Happy Cottagers.

ir Henry Raeburn, R. A. (1756–1823).
Lady Belhaven.
Master Thomas Bissland.
Master John Campbell of Saddell.
Colonel Charles Christie.
Lady Elibank.
Mr. Lawrie, of Woodlea, Castle Douglas.
Alexander Shaw.
Portrait of a Gentleman.
ir Joshua Reynolds, P. R. A. (1723–1792).
Master Bunbury.
The Right Hon. Edmund P. Burke, M. P.
eorge Romney (1734–1802).
Mrs. Crouch.
Mrs. De Crespigny.
Mrs. Finch.
Lady Grantham.
Lady Hamilton (Study Head).
Mrs. Tickell.
Rev. John Wesley.
Little Bo-Peep.
ames Stark (1794–1859).
Landscape with Cattle.
eorge Stubbs, R. A. (1724–1806).
Labourers; The Brick Cart, 1767.
. M. W. Turner, R. A. (1775–1851).
Burning of the Houses of Parliament.
ir John Watson-Gordon, R. A. (1790–1864).
Sir Walter Scott, Bart.
ichard Wilson, R. A. (1714–1782).
View on the Thames.

llection of 14 British and Dutch masters, lent by Henry Cleve-Perkins, Esq., of Washington and New York, as follows:

ir William Beechey, R. A. (1753–1839).
Portrait of a Gentleman.
ohn Hoppner, R. A. (1758–1810).
Portrait of a Boy.
ir Thomas Lawrence, P. R. A. (1769–1830).
Henry, First Earl of Mulgrave.
adbrooke.
A Cottage Scene.
Michael Janson Mierevelt (1567–1641).
Portrait of a Dutch Lady.
ohn Opie, R. A. (1761–1807).
Portrait of a Girl.
ir Joshua Reynolds, P. R. A. (1723–1792).
Frances, Countess of Clermont. (From collection of the Earl of Carlisle).
alomon Ruysdael (1600–1670).
The Windmill.

Richard Wilson, R. A. (1714–1782).
Study of Ruins.
Study of Ruins.
Landscape.
Artist unknown.
Landscape with Cottage.
Attributed to Van Dyck.
Madonna and Child. (From the Duchess of Montrose Collection, Eng.).
Jan Victoors (1620–1672).
Portrait of a Dutch Girl. (Collection of the Princess Mathilde.)

Three oil paintings by E. Hodgson Smart (1873–): "The Portrait of my Mother," 1915; "The Madonna of the Blue Veil," 1918; and portrait of James A. Stearman, 1917. Lent by the artist; withdrawn before close of the fiscal year.

"The Sphinx" (oil painting), by Colonel George Raum, C. S. A., as it appeared when excavated by him in 1896. Lent by the artist. Berkeley, Calif.

Three oil paintings: "The Fortune Teller," by Antonio Allegri da Correggio (1494–1534); "The Queen," by Jacobo Robusti (Il Tintoretto) (1512–8 to 1594); "Death of Lucretia," by Guido Reni (called Guido) (1575–1642). Acquired by the late Hon. Hannis Taylor in 1887, during his sojourn in Spain as United States minister, and lent by Mrs. Hannis Taylor, Washington, D. C.

"Spectres of the North (Icebergs)," and "Shoshone Falls of Snake River, Idaho," by Thomas Moran (1837–). Lent by the artist, Santa Barbara, Calif.

Self portrait by the artist, James DeVeaux, of Charleston, S. C. (1812–1844), painted in Paris, 1836. Lent by Mr. Porter F. Cope, Philadelphia, Pa.

Main entrance to the Benjamin H. Warder residence, designed by H. H. Richardson, from the Benjamin H. Warder residence, 1515 K Street NW., removed to make room for a modern office building. The stone is of Numidian marble and the wood white holly. Carving of the holly is by skilled workmen, assisted by students from Richardson's Boston office. Erected in 1885, and among the last houses designed by Richardson. Other houses by this master architect are the John Hay, the Henry Adams, and the N. L. Anderson residences in Washington. Richardson was born in New Orleans, the son of a southern planter; educated at Harvard and the Ecole des Beaux Arts, Paris; died 1886, aged 47 years. Lent by the Architects' Advisory Council, Horace W. Peasley, chairman.

Portrait of Richard Brinsley Sheridan, by Sir Joshua Reynolds, P. R. A. (1723–1792); lent by Ralph Cross Johnson, Esq.

Five paintings: Portrait of Admiral Holding Stevens, 2d, by Robert Hinckley; portrait of Mrs. Thomas Holding Stevens, his wife, artist unknown; portrait of Hon. Eben Sage, of Middletown,

nn., by Chester Harding; "Madonna," by Honario Mariari, orite pupil of Carlo Dulci; "Madonna," by Carlo Mahratta. Lent Mrs. Pierre C. Stevens, through Mrs. Frederick C. Hicks, Port shington, Long Island, N. Y.

Portrait of Warren G. Harding, President of the United States, 21-1923; by E. Hodgson Smart (1873–). Lent by the artist.

DISTRIBUTIONS.

Loans have been withdrawn by their owners, as follows: "Christ the Temple," by J. B. Tiepolo; "The Doctor's Visit," by Jan een; and "A Young Dutch Girl," by N. Drost; withdrawn by lph Johnson, Esq.

Portrait of George Washington, by Rembrandt Peale, and portait of John V. L. Pruyn, by Charles L. Elliott; withdrawn by n. Charles S. Hamlin. (The Washington was returned before se of the year.)

Portrait of Henry Clay Ide, by Ossip Perelma; turned over to rs. W. Bourke Cockran by direction of Mr. Perelma.

Portrait of Dr. George F. Becker and of Mrs. Florence Becker, by dor Encke; portrait of Mrs. Sarah Carey Becker, by Waring; inting by a Japanese artist; "A Woodland Study" and "The acid Potomac," by W. H. Holmes; "The Deer Pass" (steel engrav-g), by Landseer, and a bas-relief; withdrawn by Mrs. Florence cker Forrester.

"Landscape," by N. Diaz; withdrawn by Dr. C. C. Galloway.

"The Madonna of the Blue Veil," "Portrait of My Mother," and rtrait of James A. Stearman, by E. Hodgson Smart; withdrawn by . Smart.

Don Giovanni Rilgas, attributed to Cimabue; withdrawn by Capt. lgar Thompson, United States Navy.

LOANS BY THE GALLERY.

The painting recently received through the Ranger fund, entitled Tohickon," by Daniel Garber, N. A., was lent to the Art Institute Chicago, to be shown at their annual exhibition, November 2 to ecember 1, 1922. It has been returned to the gallery.

The portrait of Miss Ellen Day Hale, by Mrs. Margaret Lesley ush-Brown, presented to the gallery by Mr. Arthur Hale, was lent Mrs. Bush-Brown to be exhibited at the art alliance of Philadelphia from January 3 to 16, 1923. It has been returned to the allery.

The portrait of Sir James J. Shannon, R. A., painted in London Sir James' studio by Orland Rouland (1871–), was lent Mr. Rouland to be included in an exhibit of his paintings in New

York City, April 15–25, 1923. The painting has been returned to the gallery.

The portrait of Gen. George Washington, by Rembrandt Peale, belonging to Hon. and Mrs. Charles S. Hamlin, and the portrait of George Washington, by Charles Willson Peale, the property of Mr. John S. Beck and recorded as loans to the gallery, were lent, by permission of their respective owners, to the Pennsylvania Academy of Fine Arts, Philadelphia, Pa., to be shown at the Academy's exhibition of portraits by Charles Willson Peale, Rembrandt Peale, and James Peale, April 11 to May 9, 1923. These paintings have been returned to their places in the loan collection.

SPECIAL EXHIBITIONS.

An exhibition of American Handicrafts assembled and circulated by the American Federation of Arts was held in the gallery from November 1 to 25, 1922. It included jewelry, enamels, carved ivory, silver, pewter, iron, pottery, decorated china, batik and block-printed textiles, weavings, needlework, bookbinding, illuminations, book plates, designs for advertising, stained glass, wood carving, and lacquer, and consisted of 212 items, as shown by the catalogue prepared by Miss Elizabeth Neat and printed privately. The Regents and secretary of the Smithsonian Institution extended invitations to an opening private view of the exhibit on the afternoon of Wednesday, November 1, and many persons attended.

A collection of antique Etruscan, Greco-Roman, and Byzantine jewelry, and ancient glassware, pottery, and a bronze statuette of Nyx (Night), dating from the seventh century B. C. to the eleventh century A. D., was exhibited in the gallery under the auspices of the Archaeological Society of Washington, Dr. Mitchell Carroll, secretary, from January 10 to April 23, 1923. This collection is the property of Mr. Kurt W. Bachstitz, of The Hague, Holland, by whom it was lent to the Archaeological Society. A reception by the society was held on the evening of January 9, when the members and friends assembled to hear the lecture by Count Byron Kuhn de Prorok on his recent excavations at Carthage viewed the collection.

The Chicago Tribune exhibit of 90 original architectural drawings, selected from over 200 designs submitted in the Chicago Tribune's $100,000 architectural competition for their new $7,000,000 Administration Building was held in the Gallery, April 19 to 21. This competition engaged the talents of the best men in the architectural profession throughout the world, 22 nations being represented, and not only the prize design, by John M. Howells and Raymond M. Hood, associates, of New York (who became the architects of the building), but also those receiving other prizes

and honorable mentions, were shown. The exhibit was placed on view by the Chicago Tribune in cities throughout the country at the chapters of the American Institute of Architects, fine art societies and art institutions, architectural schools, and universities, and was procured for the national gallery through the efforts of the Hon. Frederic A. Delano, Regent of the Smithsonian Institution.

THE HENRY WARD RANGER FUND.

The paintings purchased during the year by the council of the National Academy of Design from the fund provided by the Henry Ward Ranger bequest, with the names of the institutions to which they have been assigned, are as follows:

Title.	Artist.	Date purchased.	Assigned.
20. The High Seas.....	Gordon Grant.....	Dec. 4, 1922	Art Association of Richmond, Ind.
21. A Morning in Summer.	Leonard Ochtman, N. A.	.....do.....	Albany Institute and Historical and Art Society, Albany, N. Y.
22. The Quiet Valley...	Guy Wiggins, A. N. A..	.....do.....	Rhode Island School of Design, Providence, R. I.
23. The Maumee River.	Carlton T. Chapman, N. A.	.....do.....	The Toledo Museum of Art, Toledo, Ohio.
24. Winds of Destiny...	Elliot Clark, A. N. A...	.....do.....	The Dayton Museum of Arts, Dayton, Ohio.
25. Sleep.....	Leon Kroll, A. N. A...	.....do.....	The City Art Museum of St. Louis, Mo.
26. By the Upper Lock.	John F. Follinsbee, A. N. A.	Apr. 17, 1923	Grand Rapids Art Association, Grand Rapids, Mich.
27. The Gift.....	Ernest L. Blumenschein, A. N. A.	.....do.....	Fort Worth Museum of Art, Fort Worth, Tex.
28. Brooding Silence....	John F. Carlson, A. N.A.	.....do.....	Baltimore Museum of Art, Baltimore, Md.
29. Smugglers' Notch, Stowe, Vt.	Chauncey F. Ryder, N. A.	.....do.....	Memorial Art Gallery University of Rochester, N. Y.
30. Falling Snow, New York.	Everett L. Warner, A. N. A.	.....	Carolina Art Association, Charleston, S. C.

"The Fall Round Up," by Carl Rungius, N. A. (No. 11 in the 1922 report), recorded as assigned to the Corcoran Gallery of Art, has been transferred to the Bruce Art Museum, Greenwich, Conn.; and "Repose of Evening," by Ben Foster (No. 12 in the 1922 report), recorded as assigned to the San Francisco Museum of Art, has been transferred to the University of Michigan, Ann Arbor, Mich.

It may be mentioned in this place that, as provided by the terms of the bequest, all works purchased by the Ranger fund are later subject to transfer to the National Gallery, as directed in the following extract from the last will and testament of Henry Ward Ranger:

All pictures so purchased are to be given by the council to art institutions in America, or to any library or other institutions in America maintaining a

gallery open to the public, all such gifts to be upon the express condition that the National Gallery at Washington, administered by the Smithsonian Institute shall have the option and right, without cost, to take, reclaim, and own any picture for their collection, provided they exercise such option and right at any time during the five year period beginning ten years after the artist's death and ending fifteen years after his death, and, if such option and right is not exercised during such period, the picture shall remain and be the property of the institution to which it was first given.

NATIONAL GALLERY LIBRARY.

Accessions to the gallery library Nos. 1–325 have been recorded from various sources as gifts, purchases, and exchanges, and include bound and unbound volumes and pamphlets.

PUBLICATIONS.

Holmes, W. H. Catalogue of collections, I, National Gallery of Art. Government Printing Office, 1922. 8vo, pp. i–vi; 1–98, 25 plates and 1 ground plan.

This is the first number of the catalogue series of the gallery which is to be issued from time to time as conditions warrant. It follows in general the form of the catalogue of the art collections of the National Museum prepared by former Assistant Secretary Rathbun (Bull. 70, U. S. N. M., 1916), which was published, however, before the gallery became a separate department of the Institution. It contains an introduction by the director, giving a brief account of the development of the art interests of the Institution and an outline of the organization of the gallery. This is followed by a list of the art works acquired previous to November, 1921, with brief biographies of the artists. It is illustrated with a ground plan and full page halftone plates of 25 of the most noteworthy of paintings and sculptures in the gallery.

—— Report on the National Gallery of Art for the year ending June 30, 1922. Appendix 2, Report of the Secretary of the Smithsonian Institution: Washington, Government Printing Office, 1922, pp. 42–54. Separate.

A two-page leaflet on the National Gallery has also been issued which, like the recent leaflets on the Smithsonian Institution previously issued, is to have a wide distribution. It is intended to bring forcibly to the attention of the public the great need of a separate building to house the national art collections.

Respectfully submitted.

W. H. Holmes,
Director, National Gallery of Art.

Dr. Charles D. Walcott,
Secretary, Smithsonian Institution.

APPENDIX 3.

REPORT ON THE FREER GALLERY OF ART.

SIR: I have the honor to submit the third annual report on the Freer Gallery of Art for the year ending June 30, 1923.

THE COLLECTION.

Work completed during the year includes the examination, classification, and preliminary cataloguing of Chinese and Japanese stone sculptures and jades begun in 1922. New work undertaken includes the preliminary cataloguing and final storage of Chinese and Japanese bronzes, lacquers and wood sculptures, Near Eastern and Egyptian pottery, and miscellaneous objects of bone, ivory, metal, glass, etc., from various sources. Much additional work has been done on the preservation of oil paintings, and one Chinese *kakemono* has been remounted in panel form. The autumn, winter and early spring were largely devoted to the installation of exhibits and to other preparations for the opening of the gallery to the public on May 2, involving the construction of cases according to designs previously made, the designing of pedestals, special stands, mounts, and easels and the execution of these under direct supervision of the curator and the superintendent, the choice, exhibition and labeling of objects, the transfer of books to shelves provided for them in the east study room, and the preparation of a brief pamphlet setting forth the history of the Freer collection, together with necessary information regarding the purpose and use of the building and collection. This pamphlet was given to visitors during the opening week and has since been sold for 5 cents a copy, having reached a second printing of 3,000 copies. In June, the making of identification photographs for the catalogue cards was begun.

BUILDING AND EQUIPMENT.

Work accomplished during the year includes the completion of several undertakings mentioned in the second annual report, such as finishing gallery walls and floors, picture frames and screen boxes, as well as many new tasks completed or begun and the inevitable repairs due to normal settling of the building and to ordinary wear and tear. For the exhibition galleries, the workshop has turned out 52 cases, and has 12 others "in work"; also 9 easels, 22 pedestals, 15

special stands, 40 block plinths, 5 large frames for screens, stone sculptures and tiles, 100 reeded frames for etchings, 3 molded composition bases for stone sculptures, and five sets of barricade stands have been made; while 6 walnut panels for the exhibition of scrolls and 19 benches were contracted for and built outside. On the ground floor, the east study room has been furnished with cork flooring, bookcases and a desk, the later made in the workshop. The offices, storage rooms, workrooms and lavatories have received additional equipment, including desk lights with necessary floor outlets, metal shelving, cupboards, a set of portable shelves for photographic work, glass door panels, extra locks, electric fans, etc. The fan room floor has been painted, and in the attic, blue size has been applied to the skylights and cotton curtains have been hung above the ceiling lights for the purpose of modifying both light and heat. In the cellar, two columns have been constructed under the partition wall between two rooms in the northwest corner of the building. To the equipment of the court, fresh soil and a few trees have been added, as well as three peafowl from the National Zoological Park and a supply of goldfish from the Fish Commission. Indebtedness to these two organizations is gratefully acknowledged.

OPENING AND ATTENDANCE.

The formal opening of the gallery took place during the week of May 2 to 8, inclusive. It was preceded by a "press view" on the morning of May 1, and a private view for the Establishment and Regents of the Smithsonian Institution on the afternoon of the same day. For the opening week 3,300 invitations were issued.

Total attendance for May: 19,274.

Largest attendance on Sundays, averaging 1,022.

Smallest attendance on Mondays, averaging 406.

Total attendance for June: 13,474.

Largest attendance during the week of the Shriners' convention 1,158 and 1,202 on June 6 and 7, respectively, with an average attendance of 548 on other days. During the rest of the month, the largest attendance was on Sundays, with an average of 490, and the smallest on Mondays, with an average of 211.

Attendance in the study rooms for May and June: 186 persons, of whom 4 brought in objects for examination and 11 received permission to copy.

Total attendance for May and June: 32,648.

After June 11, a new regulation went into effect; namely, that the building should be open from 9 until 4.30 every day of the week except Monday, when it should be closed all day. This serves a double purpose in that it not only makes the exhibitions available to

ny people who are unable to come on week days, but also gives portunities for necessary work which can not be so well undertaken ıen the building is open to visitors.

FIELD WORK.

IN EUROPE.

The months of July and August were spent by Miss Guest in ırope and were devoted to a study of various collections of Oriental t, following her attendance as delegate from this gallery to the ɛetings of the Société Asiatique de Paris, held in Paris from July to 13, in celebration of the centenary of Champollion. Among the ɔst important groups of objects studied were:

The collections of the Mission Pelliot, exhibited in the Musée ıimet and the Musée du Louvre.

The partly dismantled but important loan exhibition of Oriental ttery and stone sculpture at the Musée Cernuschi.

The collections of M. Raymond Koechlin and M. Calmann.

The Central Asian paintings collected by Sir Aurel Stein and posited in the British Museum.

The objects from Turfan collected by Professor Von le Coq and w stored in the Völkerkunde Museum, and those from Samarra llected by Dr. Friedrich Sarre and now exhibited in the Kaiser ieɑrich Museum, Berlin.

Miss Guest spent several days also in the pottery works of Staf-rdshire, England, where she was given every facility for examining aterials and processes of manufacture.

Miss Guest's more detailed account of her field activities accom-ıies this report as Appendix A (not printed).

IN CHINA.

On February 12, Mr. Bishop left here for China, in charge of an cheological expedition sent out under the joint auspices of the reer Gallery of Art and the Museum of Fine Arts, Boston. Work-g in accordance with instructions, but of necessity largely at his ʏn discretion, Mr. Bishop's chief concern so far has been with mat-rs of organization, which he has managed and now settled more ccessfully than might reasonably have been expected. He has also sited several sites of great archeological interest and made observa-ɔns of importance to the future work of the expedition.

Mr. Bishop's detailed account of his field activities accompanies is report as Appendix B (not printed).

PERSONNEL.

Katharine Nash Rhoades was appointed associate, her appointment to take effect July 1.

Kwang-zung Tung was appointed field assistant, his appointment to take effect July 1.

Archibald Gibson Wenley was appointed field assistant on June 1.

Ruth L. Walker, stenographer, handed in her resignation, to take effect July 1.

Respectfully submitted.

J. E. LODGE, *Curator.*

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 4.

PORT ON THE BUREAU OF AMERICAN ETHNOLOGY.

IR: In response to your request I have the honor to submit the owing report on the field researches, office work, and other operas of the Bureau of American Ethnology during the fiscal year ed June 30, 1923, conducted in accordance with the act of Cons approved June 12, 1923. The act referred to contains the foling item:

nerican ethnology: For continuing ethnological researches among the rican Indians and the natives of Hawaii, including the excavation and ervation of archeologic remains, under the direction of the Smithsonian tution, including the necessary employees and the purchase of necessary s and periodicals, $44,000.

he chief has endeavored to expend the sum of money allotted is conservative and economical a manner as possible, although fronted with many difficulties, among which is the increased cost ield work. Since the bureau was first organized expenses for its ntenance have greatly increased, and have doubled within the 10 years. Several other tendencies of the times have limited production of results. There has been a great awakening of rest in the treatment of certain Indian tribes by Government ials which has led to a corresponding increase in requests for our lications. Never before was there a greater demand for the lished reports and bulletins of the bureau. The epoch-making overies in the Valley of the Tombs in Egypt have very greatly eased interest in the Science of Man and the desire for more irate knowledge of prehistoric man in America is very keen. spapers, magazines, and other periodicals have done much to ease this interest and as may be said with regret many fake disries have been foisted on the public. Never before have accurate unts of Indian life like those published by the Bureau of Ameri- Ethnology been more in demand than at the present time.

everal wealthy institutions have been led to give more money to erican anthropology. Plans for archeological work in Yucatan Central America costing many thousands of dollars a year are tioned in some quarters, and many thousands are annually exled by another institution on pueblo archeology. For lack of quate funds, the bureau is unable to carry on extensive work of magnitude and it remains for the bureau to continue its work

along the lines already successfully followed: by researches and publication of the results of less ambitious plans. It can not be expected that the quantity of field work with this handicap can be as great as it was when the field was almost untilled, but the chief is striving to keep the quality up to the past. For years to come as the culture of our aborigines fades into the past there will be plenty of work to do in gathering survivals and publishing reports to meet increased demand for authoritative literature on our aborigines. As the work of the bureau calls for increased popularization, in the judgment of the chief, the bureau should enlarge the number of popular articles which it publishes from time to time without decreasing strictly technical discoveries. The pages of our reports are full of the records of discoveries which are little known and at present interest only a few persons because of that fact. This should be obviated by putting into published form, suitable for the layman or for students in schools and colleges, the vast stores of knowledge which have been made by the staff of the bureau and its collaborators. The great success of the Handbook of American Indians clearly indicates the desire of the people for popular information on our aborigines and the bureau with an enlarged appropriation would be able to continue work of this nature.

In compliance with the act of Congress above-mentioned the Bureau of American Ethnology has continued its field and office researches on the American Indians including the ethnology of the Hawaiian Islands, and the inhabitants of Porto Rico and the Virgin Islands. Later in this report is a list of the annual publications. The high cost of printing has somewhat reduced the quantity but the quality has been maintained.

The rapid modification in aboriginal culture perceptible year by year in Indian manners, customs, and languages has led the chief of the bureau to encourage archeological and historical study of the Indians. Extensive researches have been carried on in Colorado, in the Harpeth Valley, Tenn., in the Ozarks, Mo., and on the Atlantic seaboard. In addition to archeological research considerable work has been done on documentary history, especially of the Creeks, Choctaws, and other Muskhogean tribes.

Although the bureau has hitherto published many memoirs on the Indians of the northwest coast, there still remains much ethnological work awaiting investigation in this territory. A very promising beginning was made in the study of the totem poles of this region by Dr. T. T. Waterman, a temporary assistant on the staff of the bureau who made a special trip to Alaska for that purpose. He not only collected considerable new material on totem poles but also on legends connected with them.

The intention of the chief is to continue the work thus inaugurated in Alaska, and to repair one of the old Indian villages for educational purposes. The former houses of the Alaska natives are now rapidly going to destruction; Kasaan, one of the largest, was deserted and has been made a national monument but is suffering for want of care. It is proposed to begin cleaning up this village, repair it, in order to minimize the dangers from fire and vandals, and put it in a condition to afford the greatest educational value to future students and tourists.

The first duty of the chief being administrative in nature much of his time is taken up by details of office work, in which, unless assisted by the members of the bureau, he would be greatly handicapped. The work of answering letters has greatly increased in the last five years, and the demands on the time of those engaged in it have been greatly multiplied. This has affected all members of the staff but it is very satisfactory to record that the letters in reply to inquiries are treated with the greatest respect and are looked upon as authoritative by the recipients.

When in Washington the chief has attended all meetings of the advisory committee on publications and one or two other committees to which he has been appointed. He has likewise accepted the welcome duty of keeping in touch with all the archeological expeditions from different institutions working on ruins in the area of the United States in order that he might intelligently advise action to the secretary on the requests for permits to carry on archeological excavations which each year are increasing in numbers.

The chief has made strenuous efforts to continue his studies of previous summers on the Mesa Verde National Park in cooperation with the National Park Service of the Department of the Interior. In July, August, and a part of September he was absent from Washington and completed the excavation of Pipe Shrine House, a building in the Mummy Lake group of mounds. An account of the initiation of this work appeared in the report for last year. This exceptional ruin was completely repaired and is now open for inspection of visitors.

The excavation and repair of a circular tower situated 300 feet from Far View House also engaged his attention from the middle of July until the close of the season. The mound of stones covering this ruin was known as far back as 1915, but its hidden building was not revealed until the close of June of the summer of 1922, when it was found to be a tower with three subterranean rooms, called kivas, which were evidently used for ceremonial purposes. Around these rooms was formerly a crowded cemetery, of ancient date, which led him to regard the whole area as a necropolis. The number of

interments was too large for the number of dwellings. The three kivas belong to the highest type of these structures characteristic of the Mesa Verde. In one of them there was a well-made wall of secondary construction showing a secondary occupation and ruder masonry. This kiva showed signs of having been abandoned and later reoccupied, but how many years elapsed between the two occupations was not evident from data available.

The excavation of this Mesa Verde tower led to new ideas of the structure and use of these remains, hundreds of which are found scattered in the canyons and on the mesas of the northern tributaries of the upper San Juan River. This tower is a fair example of the type of these buildings. It was probably an outlook for observations of the sun and ceremonies connected with the sky god.

The first type of tower recognized in the Mesa Verde is a simple lookout situated naturally on the summit of a hill or high elevation, but unaccompanied by any other building; the second type has basal rooms which apparently are used for storage of food or possibly for habitation. Far View Tower is classified in a third type in which we have a tower rising from basal subterranean kivas, granaries, and dwellings. The purpose of this type of tower is the same as Pipe Shrine House.

During the greater part of August the tops of the walls of Far View House were covered with cement to protect them from the elements, and it is believed the protected walls will remain upright for several years without further repair. The permanent protection of these open ruins is always difficult and costly, but necessary. There still remain many unsolved problems on the Mesa Verde awaiting attention, but with small appropriations new ruins can not be opened and those already opened can not be repaired.

Some distance north of Far View Tower is the depression long ago christened Mummy Lake. Its true nature is unknown, though it may have been a reservoir; but no mummies have ever been found in its vicinity. In the thick cedars about it, situated on the right hand of the road, there are several small mounds indicating ruins, generally habitations, surrounding kivas. In one of these there are walls made of large stones set on edge, standing above ground. These stones project 4 feet above the surface and their size has led to the ruin being called Megalithic House. Excavation work on this ruin was begun but not completed before the appropriation was exhausted.

About every other night during the five months the chief worked on the Mesa Verde he gave camp-fire talks to visitors and spent considerable time daily in explaining the signification of the excavations while they were in progress.

ıne, 1923, the chief made a trip to Deming, southern New and visited different localities, Fort Bayard, Central, Silver ıd Pinos Altos, where pictured food bowls have been found. chased a beautiful collection of pottery from the Mimbres which supplements that already installed in the Museum. 14 the chief first pointed out that the Mimbres Valley, in his pottery is found, was inhabited in prehistoric times by ; who excelled all other pueblos in painting realistic figures ry. The scientific value of these pictures is very great from that the prehistoric dwellers in the Mimbres Valley in this t a reliable and permanent record of certain occupations g, fishing, gambling), as well as wonderful representations ıological animals of all varieties. If we could truthfully t these figures, our knowledge of the prehistoric mythology ople of whose history, language, and relationship we know from documentary sources would be greatly increased.

ır from the close of the fiscal year, President Harding issued ımation declaring three groups of towers in southwestern o and southeastern Utah to be a national monument. This ement was particularly gratifying to the chief, not only it preserved for future generations good examples of unique ancient buildings in our southwest but also because the idea eservation of Hovenweep National Monument originated in eau of American Ethnology. The three groups composing ıument lie within a few miles of each other and are locally uin Canyon group, Holly Canyon group, and the Tejon Mesa

g the fiscal year Dr. John R. Swanton, ethnologist, has com- he following manuscripts: "Social Organization and Social of the Indians of the Creek Confederacy"; "Religious Be- l Medical Practices of the Creek Indians"; and "A Gram- Sketch of the Alabama Language."

r Swanton also completed a card catalogue, arranged under f all of the linguistic material contained in the Arte de la Timuquana, by Francisco Pareja, and an English-Indian r the same; and initiated a report on the stories of the south- Indians. By July 1 he had completed translations of stories oasati language and made a beginning on those in Alabama. l was added to his collection of references bearing on the c basis of American Indian life, and some map work was connection with this phase of Indian life.

st of July, 1923, found Dr. Truman Michelson, ethnologist, among the Fox Indians of Iowa. He collected sufficient for a manuscript entitled "The traditional origin of the

Fox Society, known as 'They who go about singing' (singing-around rite)." This material will be published in the Fortieth Annual Report of the bureau. A good beginning was also made on the ceremonial "runners" and attendants. Tribal dissensions at Tama cut short Doctor Michelson's stay among the Fox Indians and he made a reconnaissance among the Potawatomi of Wisconsin, the Chippewa at Reserve in the same State, the Ottawa of Michigan, the Delaware-Munsee of Lower Canada, and the Montagnais of Lake St. John, returning to Washington near the 1st of October. He definitely determined that there are several different Delaware dialects spoken in Canada and the United States, and that some of these dialects are not clearly related; so that the word Delaware is merely a "catch all" term.

After returning to Washington Doctor Michelson devoted his time to elaborating the paper above mentioned on "The traditional origin of the Fox Society, known as 'The Singing-around rite'," completing it for publication.

About the middle of May Doctor Michelson left for the field to make a reconnaissance of the Algonquin tribes of eastern United States and Canada, including the Labrador Peninsula. His observations lead him to conclude that the aboriginal culture of the Penobscots at Old Town, Me., is disintegrating. None of the young people speak the language, and with the constant intermarrying with whites it will be but a short time when ethnology and folklore, which are both well remembered, will be a thing of the past. The Malecites living at the "village," about 12 miles from Frederickton, New Brunswick, cling tenaciously to the language, which is spoken universally, though practically everyone also has a good command of English. Their ethnology, on the other hand, is fast disappearing. During his short visit with the Penobscots and Malecites, Doctor Michelson determined a number of peculiar morphological traits of the language as compared with central Algonquian. He finds the phonetics of both languages extremely difficult, and on the whole it may be said that neither language is archaic in type. On June 13 Doctor Michelson arrived in Sydney, Cape Breton, Nova Scotia, en route to Labrador.

The beginning of the fiscal year found Mr. John P. Harrington, ethnologist, engaged in the preparation for publication of his recent field notes on the Picurís and Taos tribes of New Mexico and the Mission Indians of California. All the notes on the Taos Indians collected by the late Mrs. M. C. Stevenson were copied and arranged for publication.

Mr. Harrington also prepared for publication a paper entitled "Picurís Children's Stories with Texts and Songs." This manu-

ipt embraces Picurís stories in native text such as are told to the lian children on winter evenings in their little isolated village in thern New Mexico. The stories have high literary quality, and ny of them hold the attention of child or adult throughout. The ume is thought to be practical for school use. The 12 songs ac- npanying the stories are beautifully rendered by Mr. Rosendo rgas, and are transcribed into musical notation by Miss H. H. berts.

Mr. Harrington also prepared an article on "How the World ew," which is an account of origins corresponding to the book of nesis of the Bible obtained from the Mission Indians of Cali- nia.

Mr. Cipriano Alvarado, a Quiché Indian of the highlands of atemala, was brought to this country for the purpose of linguistic dy by Mr. William Gates, who kindly allowed Mr. Harrington to ain from him a large amount of text material in this language. e Quiché is the direct descendant of the tongue of the ancient nple builders of the Central American jungles. In working with '. Alvarado with the kymograph, Mr. Harrington discovered that ' Quiché and other Mayan dialects possess tones exactly like those Chinese, and that these tones, as in the latter language, are often ' sole means of distinguishing words that are otherwise pho- ically identical. Work was also done with Mr. Alvarado and '. Gates on the pallophotophone, a machine recently invented by ofessor Hoxie, of the General Electric Co. The pallophotophone ved of the greatest value for the study of tones in Indian and ier languages, and its reproduction of the voice is true for all the nds, even including s, h, and those of like timbre which are im- rfectly rendered on the phonograph.

On May 3 Mr. Harrington proceeded to Santa Barbara, Calif., for ' purpose of continuing his researches on the Indians of that State. ' succeeded in finding good informants for Indian songs as well as ries and place names and obtained a large quantity of manuscript terial. This material consists of myths, place names, historical tes, accounts of early life and customs, genealogies, and Indian igs.

The Bureau of American Ethnology is doing cooperative work h the Museum of the American Indian, Heye Foundation, of New rk City, which obtained permission from the Hotel Ambassador rporation to excavate the famous Burton Mound on the beach at nta Barbara. This mound has always been known as the site of ' principal rancheria of the Santa Barbara Indians, but former ners of the property refused permission to excavate it, and when ' Potter Hotel was erected in 1901 hope of archeological investi-

gation seemed forever lost. The site was unexpectedly made again available for study on account of the burning of the hotel a few years ago.

The excavations began early in May and the Indian cemetery was located on the slope of the mound toward the beach. The graves that were opened were crowded with human bodies, trinkets, and a great variety of utensils. Among the specimens are a fragment of a soapstone canoe, soapstone pipes, fishhooks of abalone and bone, sinker stones, arrowheads of great variety, spear heads, about 40 mortars, pestles, including some very long ones, beads of many kinds, pendants, daggers, bowls and kettles of soapstone, native paint, etc.

Mr. Harrington has prepared for publication during the fiscal year approximately 1,900 pages of manuscript.

Mr. J. N. B. Hewitt, ethnologist, completed during the fiscal year the second part of his Iroquoian Cosmology, the first part having appeared in the Twenty-first Annual Report of the bureau.

During the year Mr. Hewitt spent some time editing a manuscript entitled "Report on the Indian Tribes of the Upper Missouri," by Mr. Edwin Thompson Denig, to the Hon. Isaac Stevens, Governor of Washington Territory in 1854 (?), which has been submitted for publication.

Mr. Hewitt devoted much time and research in the preparation of data for official replies to correspondents of the bureau. These inquiries in their scope touch almost the entire range of human interest, very often seeking information quite outside of the specific field of research belonging to this bureau. About 100 such replies were prepared, although some of them required more than a day's work in preparation.

Mr. Hewitt also acted as the representative of the Smithsonian Institution on the United States Board of Geographic Names.

On May 18, 1923, Mr. Hewitt left Washington on field duty. His destination was the Grand River Grant to the Six Nations of Iroquois dwelling near Brantford, Ontario, Canada. At this place Mr. Hewitt made an intensive study and revision and fuller interpretation of his voluminous texts—texts which he had recorded so fortunately in previous visits to this place. These texts embody the traditions of the founding of the League or Confederation of the Five Tribes of the Iroquois in the closing decades of the sixteenth century. They contain also the principles and laws upon which it was established, as well as the complete rituals and chants of the Council of Condolence and Installation of the Federal Government, and full explanations of the intricate political relationships of the kindreds composing the tribal members of the league.

He was also fortunate in recovering enough data relating to the Federal and tribal chieftainesses to enable him to affirm the former

istence of a set of official names for every one of these women agistrates. He also recorded much valuable information relating the several institutions of the league.

On June 24, Mr. Hewitt made a short visit to the Onondaga servation, lying about 8 miles south of Syracuse, N. Y. He de-ted his time on this reservation to a comparison of the limited nowledge possessed by the only two men who had any definite formation of the various institutions and laws and installation tuals of the Iroquois Confederation, with the records which he ossesses. The object was to ascertain, if still possible, how much his Canadian material, if any, could be said to be recent, or whether ie differences in the content were due merely to the breakdown of ie traditions of the New York Onondaga. He convinced himself iat the latter was the sole cause.

Mr. Francis La Flesche, ethnologist, was engaged most of the me during the fiscal year in assembling his notes for the third olume of his work on The Osage Tribe. In this volume are recorded wo rituals of the Osage tribal rites. One is entitled Wa-xo'-be -wa-tho^n, Singing of the Wa-xo'-be Songs, and the other, Ça Tha-çe a-xe, Weaving of the Rush.

SPECIAL RESEARCHES.

In her studies of Indian music during the fiscal year Miss Frances ensmore has included the songs of three tribes living in Arizona, ear the Mexican border. These tribes are the Yuma, Mohave, and apago. One of the manuscripts submitted this year deals with the remation ceremony of the Yuma, witnessed by Miss Densmore in 922. The ceremonial songs of this rite were recorded and informa-on given by the oldest man, who has the hereditary right to sing iese songs. It is the custom of the Yuma Indians to hold a iemorial ceremony within a year after a death, at which an image f the deceased is burned. After this ceremony the name of the ead is never spoken. A full description of this ceremony was sub-itted, together with transcriptions of its songs.

The treatment of the sick by these tribes was also studied and ealing songs of each tribe were submitted. Among these were the ngs of a Yuma medicine man, who claims the power to cure per-ns suffering from wounds in the chest, accompanied by hemor-iage. This shaman said that he did this by the aid of four in-ects and birds, one of which has power over the fluids of the body. is songs are cheerful and soothing in character, and it is interest-g to note that he forbade the people to weep during his treatment, equiring that they "appear cheerful and act in a natural manner."

Four manuscripts were submitted by Miss Densmore during the

year, bearing the following titles: "Papago medicine and dancing songs," "Dream and war songs of the Papago Indians," "Cremation and memorial ceremonies of the Yuma Indians, with related songs," and "Lightning and medicine songs of the Yuma and Mohave Indians." This material comprised 93 pages of manuscript and 84 transcriptions of songs, together with the original phonographic records and tabulated and descriptive analyses of the songs. The two most interesting musical discoveries made in this work are the presence in these tribes of songs which may be termed "pure melody without tonality," and the independent and elaborated rhythm of the accompanying instrument, either a gourd rattle or a basket drum. In many instances the accompanying instrument is transcribed separately from the melody in order to show its peculiarities.

During the summer of 1922 Miss Densmore visited the Chippewa reservations at Lac Court Oreilles, Wis., and Leech Lake and Mille Lac, Minn., collecting additional specimens of plants used in treating the sick, and other data.

In the spring of 1923 Mr. W. E. Myer, special archeologist, spent several months investigating archeological remains in central Tennessee. He visited the ancient mound group of the Banks Link farm on Duck River, in Humphreys County, Tenn., where was found the celebrated cache of fine, long flint blades and other flint objects now the pride of the collection of the Missouri Historical Society. He made a map of this group and obtained additional information in regard to these masterpieces of the ancient flint-chipper's art.

Through the active aid of several citizens of Lincoln County he was enabled to visit and study an important and hitherto undescribed mound group on Elk River, at the junction of Lincoln, Moore, and Franklin Counties. He also obtained the definite location of over 75 unrecorded sites on which ancient man had lived in Lincoln County.

He explored a small burial mound and other vestiges of an ancient Indian village on the lands of Mr. L. W. Denny, Goodlettsville, Davidson County, Tenn., where he found 20 skeletons. There was evidence that two different tribes had occupied this site at separate times in the past, and the mound yielded a number of fine artifacts which throw light on the life of the people.

Mr. Myer spent two months exploring the remains of a great prehistoric fortified Indian town in Cheatham County, Tenn., known as the Great Mound Group on account of its great central mound. With the assistance of Mr. Wilbur Nelson, State geologist of Tennessee, an excellent topographical map was made, and through the repeated efforts of Lieut. Norman McEwen, of the 136th Air Squadron, Tennessee National Guard, some good airplane photographs of the mound on the Harpeth River, near Kingston Springs, were secured.

These remains cover approximately 500 acres in two bends of the ver. In one bend he found a bold projecting hill which had been rtifically shaped from bottom to top. Three wide terraces had been ormed along the side of this hill. The original rounded summit had een leveled until a great plaza or public square, about 1,000 feet in ngth and 500 feet in breadth, had been formed. Upon the sides f this level plaza one very large mound and two smaller ones had een erected. This section of the ancient town was protected on the ater side by the perpendicular cliffs of the Harpeth River. On ne land side it was defended by an earthen embankment or breast- orks surmounted by a wooden wall, from which at intervals semi- ircular wooden towers projected. These earthen breastworks, which ad formerly supported this wooden wall, were still to be found in he undisturbed woodlands, where they yet extend about 1¼ miles, nd there is evidence that they originally ran much farther. Wooden alisades, consisting of small tree trunks, had been driven into the round side by side and wedged together and the soil thrown against hem until they were by this means firmly embedded in these earthen mbankments or breastworks. These palisades, bound closely to- ether and strongly braced, formed a wooden wall which had been lastered on the outside in order to make scaling by an enemy diffi- ılt. Earthen bastions projecting beyond this line of wall at inter- als of about 150 yards were still to be found. These had formerly ıpported the semicircular wooden towers. The enemy advancing) attack was therefore subjected to fire from the defenders through ortholes along the main wall and also to a flanking fire from the arriors in the towers on these bastions. Faint traces of some of ne timbers of these palisades and wooden towers were found in the oil of these embankments.

While the great central mound and terraced hill formed the most triking feature of this ancient town, there were in the inclosure four ther eminences whose summits had likewise been leveled into plazas. All these plazas yielded traces of earth lodges and other evidences of former buildings. The earth lodges of the common people were situated on the edges of the terraces. The larger mounds had prob- ıbly supported important public buildings and the lodges of leading personages. This grouping of important buildings around five sep- ırate plazas and in different parts of the town very probably indi- ates that the population was made up of what had once been our or five separate autonomous groups of kindred peoples. Here in heir later home each group had gathered around their own public quare in their own section of the town and thus preserved at least ome of their old ceremonials and held together in some fashion their ld organization.

It is impossible to determine even approximately the number of inhabitants, but the large number of the buildings and the long extent of the walls indicate a population of several thousand. All the buildings whose traces were uncovered appear to have been burned. Below the fallen-in wall of an important building the charred remains of the woven reed tapestry which had formerly hung upon the wall were secured for the National Museum.

It is not as yet possible to determine the age of these remains. Beyond all question this town had been destroyed long before the coming of the whites. No object of white man's manufacture was found on this site.

Mr. Gerard Fowke carried on archeological investigations in the Stratman Cave in Maries County, Mo. This cave, which is situated a little more than 2 miles south of Gascondy, the point at which the Rock Island Railroad crosses Gasconade River, has an opening on the side of a hill about 150 feet high. The approach to the cave on the river side is very steep, but from the top of the hill it is less difficult. Mr. Fowke opened a trench on the outside slope of the talus at a point 30 feet from the entrance of the cave and 16 feet below the floor level. He found most of the evidences of human occupation in superficial black earth, scattered throughout which from bottom to top were fragments of pottery, parts of vessels of varying capacity and thickness; chert knives or spearheads, none highly finished; hundreds of thousands of mussel shells more or less decayed; and other objects so abundantly found on the numerous camp sites and village sites along the Gasconade River. The artifacts were few in number and scattered throughout the mass, nowhere more than a few pieces in a cubic foot of earth. This denotes temporary occupation, at irregular intervals, over a long period of time. Yet the cave was not altogether merely a resort for temporary hunters or war parties. In addition to the pottery, which shows at least occasional sojourning in the cave, there were fragmentary bones, too fragile to preserve, of a child 2 or 3 years old, of another somewhat older, and a small adult, possibly a woman. These bones were found in different places but near the surface; there were no other indications of burials. The only specimens found worthy of note were a small hammer made of a chert twin-concretion and bearing evidence of long service; a pebble, used for sharpening small bone implements and for smoothing leather or rawhide strings; and a double concave discoidal with V-shaped margin.

While the results of the work at Stratman Cave contributed little to the antiquity of man in Missouri, Mr. Fowke's studies, which are accompanied by a small collection, are valuable in a comparative

way. The Ozark region in Missouri is yielding many surprises to the archeologist and it is believed that there still remains much field work to be done here and in the neighborhood before the character and antiquity of the Indians of that region are definitely determined.

With a small appropriation Mr. John L. Baer carried on instructive field studies on the banner stones in the Susquehanna River region, and was able to make a good series reaching from the imperfect form into the more symmetrical objects. He also investigated the pictographs found near Delta, Pa.

EDITORIAL WORK AND PUBLICATIONS.

The editing of the publications of the bureau was continued through the year by Mr. Stanley Searles, editor, assisted by Mrs. Frances S. Nichols, editorial assistant. The status of the publications is presented in the following summary:

PUBLICATIONS ISSUED.

Thirty-fourth Annual Report. Accompanying paper: A Prehistoric Island Culture Area of America (Fewkes). 281 pp., 120 pls., 69 figs.

Thirty-seventh Annual Report. Accompanying paper: The Winnebago Tribe (Radin). 560 pp., 58 pls., 38 figs.

Bulletin 76. Archeological Investigations (Fowke). 204 pp., 45 pls., 37 figs.

Bulletin 77. Villages of the Algonquian, Siouan, and Caddoan Tribes west of the Mississippi (Bushnell). 211 pp., 55 pls., 12 figs.

PUBLICATIONS IN PRESS OR IN PREPARATION.

Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians (Roth).

Thirty-ninth Annual Report. Accompanying paper: The Osage Tribe: The Rite of Vigil (La Flesche).

Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox Indian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society known as "Those Who Worship the Little Spotted Buffalo"; The Traditional Origin of the Fox Society known as "The Singing-Around Rite" (Michelson).

Forty-first Annual Report. Accompanying paper: Social Organization and Social Usages of the Indians of the Creek Confederacy (Swanton).

Bulletin 78. Handbook of the Indians of California (Kroeber).

Bulletin 79. Blood Revenge, War, and Victory Feasts among the Jibaro Indians of Eastern Ecuador (Karsten).

Bulletin 80. Mandan and Hidatsa Music (Densmore).

Bulletin 81. Excavations in the Chama Valley, New Mexico (Jeancon).

Bulletin 82. Fewkes and Gordon Groups of Mounds in Middle Tennessee (Myer).

DISTRIBUTION OF PUBLICATIONS.

The distribution of publications has been continued under the immediate charge of Miss Helen Munroe, assisted by Miss Emma B. Powers. Publications were distributed as follows:

Annual reports and separates	5,363
Bulletins and separates	11,787
Contributions to North American Ethnology	10
Introductions	3
Miscellaneous publications	531
	17,694

As compared with the fiscal year ending June 30, 1922, there was an increase of 3,479 publications distributed.

ILLUSTRATIONS.

Mr. DeLancey Gill, illustrator, with the assistance of Mr. Albert E. Sweeney, continued the preparation of the illustrations of the bureau. A summary of this work follows:

Drawings for publications	32
Photographs retouched for engraving	73
Illustration copy made ready for engraving	319
Illustrative proof edited	302
Editions of colored plates examined at Government Printing Office	160,000
Negatives prepared	222
Films developed from field exposures	240
Prints for distribution and office use	1,117

In November of last year Mr. Gill began to reclassify the large collection of ethnologic and archeologic negatives with a view of preparing a comprehensive catalogue of the linguistic families and tribes with such historic data as is available. He has made good progress in this work. About 5,000 negatives have already been catalogued.

LIBRARY.

The reference library, continued under the immediate care of Miss Ella Leary, librarian, assisted by Mr. Roderick McPherson and later by Mr. Thomas Blackwell.

During the year 500 books were accessioned. Of these 70 were acquired by purchase, 130 by gift and exchange, and 300 by binding of periodicals. The current periodicals annually received number about 925, of which 35 are by subscription, the remainder being obtained through exchange. The bureau has also received 200 pamphlets. The aggregate number of volumes in the library at the close of the year was 25,061; of pamphlets about 15,100. Satisfactory

ress was made toward the completion of the new subject cata-
e from the old imperfact author's catalogue.
he most pressing need which confronts the library is shelving
the ever increasing accumulations of books. Extensive shift-
and readjustments have been necessary during the year in order
ake space available where it is most needed, but the library is
lly lacking in facilities to allow for its expansion.

COLLECTIONS.

ie following collections, acquired by members of the bureau or
hose detailed in connection with its researches, have been trans-
d to the United States National Museum:

. Archeological objects from Alaska collected by Dr. T. T. Waterman in the spring of 1922. (5 specimens.)
. Stone collar from Mayaguez, Porto Rico.
. Two incense burners found in a cave in southern Yucatan and presented to the bureau by Maj. E. H. Ropes, United States Army.
. Archeological specimens collected along the Susquehanna River (Maryland and Pennsylvania) in October, 1922, by John L. Baer. (174 specimens.)
. Two stone pestles from the Isle of Pines.

MISCELLANEOUS.

erical.—The correspondence and other clerical work of the
has been conducted by Miss May S. Clark, clerk to the chief.
Anthony W. Wilding served as messenger and typist to the

. Roderick McPherson, messenger in the library, resigned
h 31, 1923, and Mr. Thomas Blackwell, minor clerk, was
inted May 1 to fill the vacancy.
spectfully submitted.

J. WALTER FEWKES,
Chief, Bureau of American Ethnology.

. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

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APPENDIX 5.

REPORT ON THE INTERNATIONAL EXCHANGES.

SIR: I have the honor to submit the following report on the operations of the International Exchange Service during the fiscal year ending June 30, 1923:

The work of the service having returned to a normal basis, an estimate of $45,000 was submitted for carrying on the exchanges during the year, which is $5,000 less than that appropriated for the fiscal year 1922. This appropriation was made by Congress and in addition $200 was allowed for printing and binding. The repayments from departmental and other establishments amounted to $5,263.66, making the total resources available during the year. $50,463.66.

The total number of packages handled during the past 12 months was 377,826, a decrease from the number for the preceding year of 5,331. The total weight of these packages was 492,816 pounds, a decrease of 99,784. This large decrease in the weight was due to the fact that many of the packages sent abroad contained small publications.

The number and weight of the packages of different classes are indicated in the following table:

	Packages.		Weight.	
	Sent.	Received.	Sent.	Received.
			Pounds.	*Pounds.*
United States parliamentary documents sent abroad	141,884	.....	63,325	.....
Publications received in return for parliamentary documents	.....	2,557	.....	12,511
United States departmental documents sent abroad	120,093	.....	152,169	.....
Publications received in return for departmental documents	.....	5,852	.....	18,117
Miscellaneous scientific and literary publications sent abroad	77,461	.....	154,437	.....
Miscellaneous scientific and literary publications received from abroad for distribution in the United States	.....	29,979	.....	92,257
Total	339,438	38,388	369,931	122,885
Grand total	377,826		492,816	

Although it is true that the United States Government sends abroad more publications than it receives in exchange, the disparity is not so great as appears in the table, for many foreign publica-

ons are forwarded by mail to the addresses in this country without assing through the exchanges.

It was stated in the last report that the Government of Roumania ad been approached with a view to the reopening of exchange re-ıtions with that country, and further that the Institution had ar-anged directly with the Institutul Meteorologic Central, at Buk-arest, to take charge of the forwarding and distributing of exchange onsignments. During the past year a communication has been re-eived through the Department of State from the Government of oumania to the effect that the above-mentioned institute had been esignated as the official Roumania Exchange Bureau. A note was eceived from Roumania, through the Belgian Government, stating hat under date of June 5, 1923, the Roumanian Government had eclared its adherence to the Brussels Conventions of 1886, pro-iding for the exchange of official documents and scientific and lit-rary publications and the immediate exchange of the official journal. 'or a number of years the exchange of official documents has been onducted with Roumania, although that country has only recently iven its formal adherence to the conventions.

The conditions in Russia and Turkey have not yet improved ufficiently to warrant the Institution in taking steps to establish fficial exchange bureaus in those countries. The Institution has, owever, arranged with the American Friends Service Committee o forward to Russia the large accumulations of scientific and literary ublications for correspondents in that country. Two consignments, omprising a total of 70 boxes, have thus far been forwarded to ussia in this way. The Academy of Sciences in Petrograd is act-ıg as the distributing agency.

There were shipped abroad during the year 2,223 boxes, being a ecrease of 995 from the number for the preceding 12 months. This ecrease in the number of boxes forwarded abroad, in comparison ith the number shipped during the previous year, is due partly the smaller size of many of the publications, to which reference as already been made, and partly to the fact that the number of oxes sent abroad last year was the largest in the history of the ervice, the usual number being about 2,400 annually. Moreover, ackages for certain countries were sent direct to their destination by ail, owing to the fact that a sufficient number had not accumulated o make box shipments when the regular monthly consignments ould have been forwarded. About 40,000 packages were forwarded n this manner during the year.

Of the total number of boxes sent abroad 214 contained full sets f United States official documents for foreign depositories and 2,009

included departmental and other publications for the depositories of partial sets and for miscellaneous correspondents.

The number of boxes sent to each country is given in the following table:

Consignments of exchanges for foreign countries.

Country.	Number of boxes.	Country.	Number of boxes.
Argentina	48	Latvia	2
Austria	59	Lithuania	7
Belgium	69	Mexico	4
Brazil	39	Netherlands	68
British Colonies	4	New South Wales	35
Canada	16	New Zealand	19
Chile	23	Nicaragua	2
China	79	Norway	33
Colombia	16	Paraguay	2
Costa Rica	10	Peru	12
Cuba	4	Poland	40
Czechoslovakia	89	Portugal	16
Danzig	2	Queensland	12
Denmark	36	Roumania	19
Egypt	9	Russia	70
Esthonia	9	South Australia	18
Far Eastern Republic	2	Spain	30
Finland	13	Sweden	74
France	170	Switzerland	64
Germany	295	Tasmania	5
Great Britain and Ireland	333	Union of South Africa	30
Greece	8	Uruguay	13
Haiti	2	Venezuela	7
Hungary	31	Victoria	39
India	52	Western Australia	5
Italy	96	Yugoslavia	18
Japan	65		
			2,223

FOREIGN DEPOSITORIES OF UNITED STATES GOVERNMENTAL DOCUMENTS.

In accordance with the terms of a convention concluded at Brussels March 15, 1886, and under authority granted by Congress in resolutions approved March 2, 1867, and March 2, 1901, there are now sent through exchange channels regularly to depositories abroad 57 full sets of United States official documents and 38 partial sets.

DEPOSITORIES OF FULL SETS.

ARGENTINA: Ministerio de Relaciones Exteriores, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
BADEN: Universitäts-Bibliothek, Freiburg. (Depository of the State of Baden.)
BAVARIA: Staats-Bibliothek, Munich.
BELGIUM: Bibliothèque Royale, Brussels.
BRAZIL: Bibliotheca Nacional, Rio de Janeiro.

BUENOS AIRES: Biblioteca de la Universidad Nacional de La Plata. (Depository of the Province of Buenos Aires.)
CANADA: Library of Parliament, Ottawa.
CHILE: Biblioteca del Congreso Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
COLOMBIA: Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA: Secretaria de Estado (Asuntos Generales y Canje Internacional), Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Kongelige Bibliotheket, Copenhagen.
ENGLAND: British Museum, London.
FRANCE: Bibliothèque Nationale, Paris.
GERMANY: Deutsche Reichstags-Bibliothek, Berlin.
GLASGOW: City Librarian, Mitchell Library, Glasgow.
GREECE: Bibliothèque Nationale, Athens.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
HUNGARY: Hungarian House of Delegates, Budapest.
INDIA: Imperial Library, Calcutta.
IRELAND: National Library of Ireland, Dublin.
ITALY: Biblioteca Nazionale Vittorio Emanuele, Rome.
JAPAN: Imperial Library of Japan, Tokyo.
LONDON: London School of Economics and Political Science. (Depository of the London County Council.)
MANITOBA: Provincial Library, Winnipeg.
MEXICO: Instituto Bibliográfico, Biblioteca Nacional, Mexico.
NETHERLANDS: Bibliotheek van de Tweede Kamer der Staten-Generaal, The Hague.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Storthingets Bibliothek, Christiania.
ONTARIO: Legislative Library, Toronto.
PARIS: Préfecture de la Seine.
PERU: Biblioteca Nacional, Lima.
POLAND: Bibliothèque du Ministère des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca Nacional, Lisbon.
PRUSSIA: Preussische Staatsbibliothek, Berlin, N. W. 7.
QUEBEC: Library of the Legislature of the Province of Quebec, Quebec.
QUEENSLAND: Parliamentary Library, Brisbane.
RUSSIA: Shipments temporarily suspended.
SAXONY: Landesbibliothek, Dresden-N.
SOUTH AUSTRALIA: Parliamentary Library, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SWEDEN: Kungliga Biblioteket, Stockholm.
SWITZERLAND: Bibliothèque Fédérale Centrale, Berne.
TASMANIA: Parliamentary Library, Hobart.
TURKEY: Shipments temporarily suspended.
UNION OF SOUTH AFRICA: State Library, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.

VENEZUELA: Biblioteca Nacional, Caracas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
WURTTEMBERG: Landesbibliothek, Stuttgart.
YUGOSLAVIA: Ministère des Affaires Etrangères, Belgrade.

DEPOSITORIES OF PARTIAL SETS.

ALBERTA: Provincial Library, Edmonton.
ALSACE-LORRAINE: Bibliothèque Universitaire et Régionale de Strasbourg, Strasbourg.
BOLIVIA: Ministerio de Colonización y Agricultura, La Paz.
BRAZIL: Bibliotheca da Assemblea Legislativa do Estado do Rio de Janeiro, Nictheroy.
BREMEN: Senatskommission für Reichs- und Auswärtige Angelegenheiten.
BRITISH COLUMBIA: Legislative Library, Victoria.
BRITISH GUIANA: Government Secretary's Office, Georgetown, Demerara.
BULGARIA: Ministère des Affaires Etrangères, Sofia.
CEYLON: Colonial Secretary's Office (Record Department of the Library), Colombo.
ECUADOR: Biblioteca Nacional, Quito.
EGYPT: Bibliothèque Khédiviale, Cairo.
FINLAND: Central Library of the State, Helsingfors.
GUATEMALA: Secretary of the Government, Guatemala.
HAMBURG: Senatskommission für die Reichs- und Auswärtigen Angelegenheiten.
HESSE: Landesbibliothek, Darmstadt.
HONDURAS: Secretary of the Government, Tegucigalpa.
JAMAICA: Colonial Secretary, Kingston.
LATVIA: Ministry of Foreign Affairs, Riga.
LIBERIA: Department of State, Monrovia.
LOURENÇO MARQUEZ: Government Library, Lourenço Marquez.
LÜBECK: President of the Senate.
MADRAS, PROVINCE OF: Chief Secretary to the Government of Madras, Public Department, Madras.
MALTA: Lieutenant Governor, Valetta.
NEW BRUNSWICK: Legislative Library, Fredericton.
NEWFOUNDLAND: Colonial Secretary, St. John's.
NICARAGUA: Superintendente de Archivos Nacionales, Managua.
NOVA SCOTIA: Provincial Secretary of Nova Scotia, Halifax.
PANAMA: Secretaria de Relaciones Exteriores, Panama.
PARAGUAY: Oficina General de Inmigracion, Asuncion.
PRINCE EDWARD ISLAND: Legislative Library, Charlottetown.
ROUMANIA: Academia Romana, Bukharest.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SASKATCHEWAN: Government Library, Regina.
SIAM: Department of Foreign Affairs, Bangkok.
STRAITS SETTLEMENTS: Colonial Secretary, Singapore.
SWITZERLAND: Library of the League of Nations, Palace of Nations, Quai de Leman, Geneva.
UNITED PROVINCES OF AGRA AND OUDH: Undersecretary to Government, Allahabad.
VIENNA: Bürgermeister-Amt der Stadt Wien.

NTERPARLIAMENTARY EXCHANGE OF OFFICIAL JOURNALS.

he interparliamentary exchange is carried on by this institution behalf of the United States Government in accordance with hority granted in a congressional resolution approved March 4, 9, the purpose of that resolution being to carry into effect the visions of the second convention concluded at Brussels, March 1886, providing for the immediate exchange of the Official Journal, vell as of the parliamentary annals and documents, to which the ited States was one of the signatories.

. complete list of the countries now taking part in this exchange given below, together with the names of the establishments to ch the daily issue of the Congressional Record is mailed:

NTINA: Biblioteca del Congreso Nacional, Buenos Aires.
TRALIA: Library of the Commonwealth Parliament, Melbourne.
TRIA: Bibliothek des Nationalrates, Wien I.
N: Universitäts-Bibliothek, Heidelberg.
IUM: Bibliothèque de la Chambre des Représentants, Brussels.
VIA: Cámara de Diputados, Congreso Nacional, La Paz.
IL: Bibliotheca do Congresso Nacional, Rio de Janeiro.
NOS AIRES: Biblioteca del Senado de la Provincia de Buenos Aires, La Plata.
ADA:
Library of Parliament, Ottawa.
Clerk of the Senate, Houses of Parliament, Ottawa.
A RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San sé.
:
Biblioteca de la Cámara de Representantes, Habana.
Biblioteca del Senado, Habana.
HOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
MARK: Rigsdagens Bureau, København.
IONIA: Riigiraamatukogu, Reval.
CE:
Bibliothèque de la Chambre des Députés, au Palais Bourbon, Paris.
Bibliothèque du Sénat, au Palais du Luxembourg, Paris.
AT BRITAIN: Library of the Foreign Office, Downing Street, London, S. W. 1.
CE: Library of Parliament, Athens.
TEMALA: Biblioteca de la Oficina Internacional Centro-Americana, 8a Calle niente No. 1, Ciudad de Guatemala.
DURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
GARY: Bibliothek des Abgeordnetenhauses, Budapest.
Y:
Biblioteca della Camera dei Deputati, Palazzo di Monte Citorio, Rome.
Biblioteca del Senato del Regno, Palazzo Madama, Rome.
RIA: Department of State, Monrovia.
SOUTH WALES: Library of Parliament, Sydney.
ZEALAND: General Assembly Library, Wellington.
J: Câmara de Diputados, Congreso Nacional, Lima.
ND: Monsieur le Ministre des Affaires Etrangères, Warsaw.
TUGAL: Bibliotheca do Congresso da Republica, Lisbon.

PRUSSIA: Bibliothek des Abgeordnetenhauses, Prinz-Albrechtstrasse 5, Berlin, S. W. 11.
QUEENSLAND: The Chief Secretary's Office, Brisbane.
ROUMANIA: Bibliothèque de la Chambre des Députés, Bukharest.
RUSSIA: Sendings temporarily suspended.
SPAIN:
Biblioteca del Congreso de los Diputados, Madrid.
Biblioteca del Senado, Madrid.
SWITZERLAND:
Bibliothèque de l'Assemblée Fédérale Suisse, Berne.
Library of the League of Nations, Geneva.
TRANSVAAL: State Library, Pretoria.
UNION OF SOUTH AFRICA: Library of Parliament, Cape Town.
URUGUAY: Biblioteca de la Cámara de Representantes, Montevideo.
VENEZUELA: Cámara de Diputados, Congreso Nacional, Caracas.
WESTERN AUSTRALIA: Library of Parliament of Western Australia, Perth.
YUGOSLAVIA: Library of the Skupshtina, Belgrade.

The total number of copies of the daily Congressional Record set aside by law for exchange with foreign legislative bodies is 100. This exchange is at present conducted with 44 establishments.

FOREIGN EXCHANGE AGENCIES.

The State Library (Riigiraamatukogu), Reval, has been designated as the exchange agency for Esthonia.

A complete list of the foreign exchange agencies or bureaus will be found below:

ALGERIA, *via* France.
ANGOLA, *via* Portugal.
ARGENTINA: Comisión Protectora de Bibliotecas Populares, Calle Cordoba 931, Buenos Aires.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
AZORES, *via* Portugal.
BELGIUM: Service Belge des Echanges Internationaux, Rue des Longs-Chariots 46, Brussels.
BOLIVIA: Oficina Nacional de Estadística, La Paz.
BRAZIL: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Rio de Janeiro.
BRITISH COLONIES: Crown Agents for the Colonies, London.
BRITISH GUIANA: Royal Agricultural and Commercial Society, Georgetown.
BRITISH HONDURAS: Colonial Secretary, Belize.
BULGARIA: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
CANARY ISLANDS, *via* Spain.
CHILE: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
CHOSEN: Government General, Keijo.
COLOMBIA: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.

ZECHOSLOVAKIA: Service Tchécoslovaque des Echanges Internationaux, Bibliothèque de l'Assemblée Nationale, Prague 1–79.
ANZIG: Stadtbibliothek, Danzig.
ENMARK: Kongelige Danske Videnskabernes Selskab, Copenhagen.
UTCH GUIANA: Surinaamsche Koloniale Bibliotheek, Paramaribo.
CUADOR: Ministerio de Relaciones Exteriores, Quito.
GYPT: Government Publications Office, Printing Department, Bulaq, Cairo.
STHONIA: State Library, Reval.
AR EASTERN REPUBLIC: Teachers' College of the Far Eastern Republic, Vladivostok.
INLAND: Delegation of the Scientific Societies of Finland, Helsingfors.
RANCE: Service Français des Échanges Internationaux, 110 Rue de Grenelle, Paris.
ERMANY: Amerika-Institut, Universitätstrasse 8, Berlin, N. W. 7.
REAT BRITAIN AND IRELAND: Messrs. Wheldon & Wesley, 2, 3, and 4 Arthur St., New Oxford St., London, W. C. 2.
REECE: Bibliothèque Nationale, Athens.
REENLAND, *via* Denmark.
UATEMALA: Instituto Nacional de Varones, Guatemala.
AITI: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
ONDURAS: Biblioteca Nacional, Tegucigalpa.
UNGARY: Dr. Julius Pikler, Fővárosi Telekértéknyilvántartó Hivatal (City Land Valuation Office), Központi Városház, Budapest IV.
ELAND, *via* Denmark.
DIA: Superintendent of Stationery, Bombay.
ALY: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio Emanuele, Rome.
AMAICA: Institute of Jamaica, Kingston.
APAN: Imperial Library of Japan, Tokyo.
AVA, *via* Netherlands.
ATVIA: Ministry of Foreign Affairs, Riga.
IBERIA: Bureau of Exchanges, Department of State, Monrovia.
ITHUANIA: Sent by mail.
OURENÇO MARQUEZ, *via* Portugal.
UXEMBURG, via Belgium.
ADAGASCAR, *via* France.
ADEIRA, *via* Portugal.
OZAMBIQUE, via Portugal.
ETHERLANDS: Bureau Scientifique Central Néerlandais, Bibliothèque de l'Académie technique, Delft.
EW SOUTH WALES: Public Library of New South Wales, Sydney.
EW ZEALAND: Dominion Museum, Wellington.
ICARAGUA: Ministerio de Relaciones Exteriores, Managua.
ORWAY: Kongelige Norske Frederiks Universitet, Bibliotheket, Christiania.
ANAMA: Secretaria de Relaciones Exteriores, Panama.
ARAGUAY: Servicio de Canje Internacional de publicaciones, Sección Consular y de Comercio, Ministerio de Relaciones Exteriores, Asuncion.
ERU: Oficina de Reparto, Depósito y Canje Internacional de Publicaciones, Ministerio de Fomento, Lima.
OLAND: Bibliothèque du Ministère des Affaires Étrangères, Warsaw.
ORTUGAL: Secção de Trocas Internacionaes, Bibliotheca Nacional, Lisbon.

QUEENSLAND: Bureau of Exchanges of International Publications, Chief Secretary's Office, Brisbane.
ROUMANIA: Institutul Meteorologic Central, Ministerul Agriculturei, Bukharest.
RUSSIA: Academy of Sciences, Petrograd.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SIAM: Department of Foreign Affairs, Bangkok.
SOUTH AUSTRALIA: Public Library of South Australia, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SUMATRA, *via* Netherlands.
SWEDEN: Kongliga Svenska Vetenskaps Akademien, Stockholm.
SWITZERLAND: Service des Echanges Internationaux, Bibliothèque Fédérale Centrale, Berne.
SYRIA: American University of Beirut.
TASMANIA: Secretary to the Premier, Hobart.
TRINIDAD: Royal Victoria Institute of Trinidad and Tobago, Port-of-Spain.
TUNIS, *via* France.
TURKEY: Shipments temporarily suspended.
UNION OF SOUTH AFRICA: Government Printing Works, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
VENEZUELA: Biblioteca Nacional, Carácas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
YUGOSLAVIA: Académie Royal Serbe des Sciences et des Arts, Belgrade.

Mr. Henry A. Parker and Mr. John S. Pollock were retired August 20, 1922, under the provisions of the governmental retirement act. Mr. Parker was connected with the Institution for 42 years, and Mr. Pollock, 44 years.

Respectfully submitted.

C. G. ABBOT,
Assistant Secretary.
In Charge of Library and Exchanges.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 6.

REPORT ON THE NATIONAL ZOOLOGICAL PARK.

SIR: I have the honor to submit the following report on the operans of the National Zoological Park for the fiscal year ending ne 30, 1923:

Since the expenses of the National Zoological Park, like those some other activities of the Federal Government, are borne in rt by the District of Columbia, the Bureau of the Budget has, th the initiation of the budget law and for purposes of accounting, luded the estimates of the park within the District bill. The making appropriations for the Government of the District Columbia and other activities chargeable in whole or in part inst the revenue of such District, approved June 29, 1922, conned an item of $125,000 for the regular maintenance of the park. an addition to the continuing appropriations available from mer years for the purchase of land near the Adams Mill Road rance, there was appropriated by Congress in the second deficy bill approved January 22, 1923, the sum of $3,096.34 to plete the sum of $8,000 necessary for the termination of this chase. The bill providing for printing and binding, Smithsonian titution, contained an allotment of $300 for the National Zoologi- Park. This was an increase of $100 over former allotments, ich had, during recent years, been insufficient for the needs of the k.

Considerable progress has been made during the year in the work preparing for use the area between the great flight cage and the in road in the western part of the park. This work was begun en years ago but was discontinued during the war. Other minor airs and improvements have been made, and much effort has been pended in beautifying the grounds, particularly in the parts of park most used by the public. The value of the collection is ater than ever before; more species of animals are on exhibition d the actual number of specimens of all kinds is greater than in y previous year. Attendance records, for the fourth successive ar, have exceeded 2,000,000 visitors.

ACCESSIONS.

Gifts.—The number of animals presented by friends of the park shows continued and gratifying increase from year to year. During the past year 266 specimens were thus added to the collection. Many of these are of particular value and, as in the previous year, special mention should be made of important contributions from tropical America.

Hon. Henry D. Baker, American consul at Trinidad, West Indies, and Mr. William J. La Varre, of Georgetown, British Guiana, both continued their gifts of South American animals. Interesting birds, mammals, and reptiles were received from Mr. Baker, and included in the collections made by Mr. La Varre were two fine specimens of the dusky parrot (*Pionus fuscus*), a species of special interest to the park. Mr. Gordon MacCreagh, of New York City, collected and presented a specimen of the Brazilian red ouakari monkey (*Cacajao rubicundus*), a species rarely seen in captivity and never before represented, apparently, in any zoological garden in the United States. Like the other members of its genus this monkey is very difficult to keep, but this specimen presented by Mr. MacCreagh lived in the park from August 25, 1922, until April 24, 1923, a period of eight months. Among other animals from Mr. MacCreagh was a specimen of the matamata turtle (*Chelys fimbriata*).

Dr. William M. Mann, of the Bureau of Entomology, while engaged in work in southern Mexico, collected for the park a number of interesting animals. Of special interest in Doctor Mann's collection are two Mexican spider monkeys, four Maw's turtles, and eight specimens of Petz's paroquet. The turtle and the paroquet are species new to the park records. Dr. C. Bonne, of Moengo, Surinam, presented to the park a fine young tapir; and Mr. C. E. Bergman, of Norfolk, Va., contributed a specimen of the Magellan fox from Chile, a species not before shown in the park.

The Canadian Government, through Hon. J. B. Harkin, Commissioner of Dominion Parks, presented five Rocky Mountain goats from the preserves at Banff, Alberta, and six young great black-backed gulls from Nova Scotia. The Department of Conservation, State of Michigan, through Mr. W. H. Rowett, State warden, contributed a female timber wolf from the Porcupine Mountains, Gogebic County, Mich.

Mr. Victor J. Evans, of Washington, D. C., continuing his active interest in the collection, contributed a number of desirable animals, among them being specimens of the frogmouth (*Podargus strigoides*) and New Guinea fruit pigeon (*Lamprotreron superba*).

Ninety-nine individual donors contributed to the collection during e year. The complete list is as follows:

Miss Ella Abbott, Lansing, Mich., Florida gallinule.
Dr. Arthur A. Allen, Ithaca, N. Y., 8 canvasbacks.
Mr. Frank Amorosa, Washington, D. C., 5 sparrow hawks.
Mr. H. M. Atherton, Washington, D. C., sparrow hawk.
Hon. Henry D. Baker, Trinidad, B. W. I., douroucouli, curassow, snowy egret, American egrets, and 2 South American tortoises.
Mrs. L. B. Batkins, South Richmond, Va., raccoon.
Mr. Walter M. Bauman, Washington, D. C., woodchuck.
Mr. C. E. Bergman, Norfolk, Va., Magellan fox.
Mrs. V. L. Blankenship, Richmond, Va., great horned owl.
Dr. C. Bonne, Moengo, Surinam, Brazilian tapir.
Mr. Maurice K. Brady, Washington, D. C., 4 spreading adders.
Dr. E. W. Brandes, Department of Agriculture, Washington, D. C., scarlet ıg snake.
Mr. E. O. Breeden, Radford, Va., barn owl.
Mr. Colvin B. Brown, Washington, D. C., alligator.
Canadian Government, through Hon. J. B. Harkin, 5 Rocky Mountain goats d 6 great black-backed gulls.
Mrs. A. J. Clapp, Washington, D. C., canary.
Miss May S. Clark, Washington, D. C., horned toad.
Mr. Samuel Hopkins Clark, Ellicott City, Md., red fox.
Mr. A. W. Claver, Laurel, Md., golden eagle.
Mr. C. E. Conner, Lewisburg, W. Va., golden eagle.
Mr. W. C. Cox, Washington, D. C., box-turtle.
Rev. Philip Ayers Dales, Washington, D. C., horned toad.
Mrs. Edward R. Davis, Mountain Lake Park, Md., red fox.
Mr. C. Dowling, Washington, D. C., tayra and two boa constrictors.
Sergt. J. J. Doyle, Marine Barracks, Washington, D. C., great horned owl.
Mr. William Driesbach, Washington, D. C., Virginia opossum.
Mr. George Duquette, Belleview, Md., coyote.
Mr. George Eastment, Washington, D. C., canary.
Mr. Henry Parsons Erwin, Washington, D. C., 2 alligators.
Mr. Victor J. Evans, Washington, D. C., ruffed lemur, Arabian baboon, 2 ›ra-ass hybrids, 2 gray spider monkeys, 2 Gould's monitors, 2 western dia-›nd rattlers, fruit pigeon, frogmouth, screech owl, ostrich, American egret, shining starlings, and 5 great white herons.
Dr. N. S. Ferris, Washington, D. C., cardinal.
Mr. V. M. Fookes, Washington, D. C., horned toad.
Mrs. Edw. J. Gardiner, Washington, D. C., double yellow-head parrot.
Mr. W. G. Gossom, Haymarket, Va., banded rattlesnake.
Mrs. E. S. Grimsley, Washington, D. C., canary.
Mrs. J. B. Harding, Washington, D. C., 3 painted turtles.
Hon. Warren G. Harding, White House, Washington, D. C., Virginia opossum.
Mrs. Nannie M. Hawkins, Washington, D. C., Virginia opossum.
Prof. A. L. Herrera, Mexico, D. F., Mexico, tree iguana and Mexican gopher ·toise.
Mr. Otis B. Hinnant, Wilmington, N. C., 6 diamond-back rattlers.
Mrs. John S. Hord, Washington, D. C., black-faced Gouldian finch and 2 va sparrows.
Mr. Worthington Houghton, Washington, D. C., horned toad.

Commander J. C. Hunsaker, Washington, D. C., 2 Florida raccoons.

Mr. J. Roland Johnston, Bethesda, Md., diamond-back rattler.

Mrs. J. R. Ketner, Washington, D. C., 2 canaries.

Mrs. Sam Kite, Washington, D. C., alligator.

Mr. C. Hubert Kreh, Frederick, Md., copperhead.

Mr. R. R. Lambert, Washington, D. C., muscovy duck.

Mr. W. J. La Varre, jr., Georgetown, British Guiana, coatimundi, 2 capybaras, 2 weeping capuchins, 6 titi monkeys, blue-and-yellow macaw, 2 dusky parrots, and 50 blue-winged parrotlets.

Hon. Gordon Lee, Washington, D. C., barn owl.

Mr. Manoel de Oliveira Lima, Washington, D. C., curió and white-bellied seedeater.

Mrs. F. S. Lincoln, Washington, D. C., 2 alligators.

Mr. H. J. Long, Fallon, Nev., 2 golden eagles.

Mrs. Dangerfield Love, Washington, D. C., 2 strawberry finches.

Mrs. W. D. Lynham, Washington, D. C., canary.

Mr. Gordon MacCreagh, New York City, red ouakari monkey, matamata turtle, and South American tortoise.

Dr. William M. Mann, Washington, D. C., tree porcupine, 2 spider monkeys, 4 Maw's turtles, 4 Central American cooters, lesser white-fronted parrot, 2 San Lucas house finches, and 8 Petz's paroquets.

Dr. C. B. Masson, Washington, D. C., copperhead.

Mr. William Matthews, Washington, D. C., canary.

Mrs. L. E. McLaren, Washington, D. C., alligator.

Mr. R. Mehrlich, Washington, D. C., chameleon.

Mr. John A. Meyers, Washington, D. C., 2 red-shouldered hawks.

Dr. James F. Mitchell, Washington, D. C. marine iguana.

Dr. MacD. Moore, Washington, D. C., black snake.

Mrs. R. L. Myers, Washington, D. C., alligator.

New York Zoological Society, Bronx Park, N. Y., ground hornbill.

North Dakota Fish and Game Commission, through Mr. E. T. Judd, Cando, N. Dak., two Canada geese.

Mr. J. R. Page, jr., Aberdeen, N. C., two spreading adders.

Dr. Theophilus S. Painter, Austin, Tex., two armadillos.

Mr. J. E. Pankin, Washington, D. C., gray parrot.

Mr. H. W. Peck, Washington, D. C., alligator.

Mr. C. Roberts Perkins, Elkton, Md., alligator.

Mrs. Rose Las Pinas, Washington, D. C., sparrow hawk.

Miss Appolonia Ramicy, Washington, D. C., two canaries.

Mr. Harwood E. Reed, Washington, D. C., Java finch.

Mr. Earl D. Reid, Washington, D. C., pilot black snake.

Mr. F. H. Riley, Washington, D. C., great horned owl.

Mr. H. L. Robinson, Washington, D. C., two Cuban parrots.

Mr. W. H. Rowett, Bessemer, Mich., timber wolf.

Lieut. H. Herman Rudolph, Washington, D. C., two ring-necked pheasants.

Mrs. Whitefield Sammis, Washington, D. C., yellow-naped parrot.

Maj. C. R. Sanderson, Washington, D. C., red-and-blue-and-yellow macaw.

Mrs. Samuel Saylor, Washington, D. C., barn owl.

Mrs. N. Scanland, Ballston, Va., American crow.

Mr. William Scheible, Washington, D. C., wood duck.

Capt. T. A. Secor, U. S. M. C., Washington, D. C., Panama titi monkey.

Mr. George Shelton, Indian Head, Md., bald eagle.

Dr. R. W. Shufeldt and Mr. Maurice K. Brady, Washington, D. C., painted turtle, musk turtle, and 2 Pennsylvania musk turtles.
Mr. Maynard Simmons, Washington, D. C., horned toad.
Mr. W. N. Slye, Washington, D. C., alligator.
Mr. Ernest Smoot, Washington, D. C., ring-necked pheasant.
Mrs. Anna P. Stewart, Washington, D. C., 2 canaries.
Mr. P. J. Talbot, Washington, D. C., yellow-naped parrot.
Messrs. Thourez and Smith, Los Angeles, Calif., green guenon.
Mr. Clarence Turner, Latonia, Ky., black bear.
Mr. J. S. Warmbath, Washington, D. C., red-tailed hawk.
Dr. David White, Washington, D. C., alligator.
Mr. C. H. Wilson, Washington, D. C., barred owl.
Mr. Charles H. Zier, Washington, D. C., Virginia opossum.

Births.—During the year 51 mammals were born and 29 birds were hatched in the park. These records include only such as are reared to a reasonable age, no account being made in these published statistics of young that live only a few days. Mammals born include: European bear, 3; lion, 3; dingo, 3; gray wolf, 4; raccoon, 2; mountain goat, 1; tahr, 1; bison, 2; Indian buffalo, 1; guanaco, 2; llama, 2; red deer, 7; American elk, 2; barasingha, 1; Japanese deer, 6; hog deer, 1; Virginia deer, 2; Trinidad agouti, 1; rhesus monkey, 2; mona, 1; rufus-bellied wallaby, 3; great red kangaroo, 1. Birds hatched were of the following species: Mallard, black duck, wood duck, silver pheasant, peafowl, and black-crowned night heron.

Exchanges.—Specimens received in exchange for surplus stock include 27 mammals and 21 birds. Special mention should be made of two Greenland musk oxen imported by way of Norway, the first ever to be shown in the park: two mouflons, the wild sheep of Corsica and Sardinia; a fine male nilgai from India; a clouded leopard, marbled cat (*Felis marmorata*), and fire cat (*Ailurin planiceps*) from Sumatra: a male panda from India; 2 black and 2 fulvous lemurs; and a two-toed sloth. Birds received in exchange include, besides other more common species, 3 kagus, 2 Victoria crowned pigeons, 3 blackhead ibises, 2 falcated ducks, and 2 eagle owls.

Purchases.—Among the mammals purchased during the year were 2 Alaska Peninsula bear cubs, 2 Alaskan black-tailed deer, an ocelot, and 2 otters. Birds purchased include some very desirable specimens: 2 Marquesan doves, 2 red-breasted mergansers, 2 sooty shearwaters, 4 wood ibises, and a gannet. A number of more common water birds, cage birds, eagles, and owls, as well as a number of reptiles, were also acquired by purchase.

Transfers.—Among the animals received by transfer from other Government departments special mention should be made of a shipment of 36 specimens of the Laysan finch, collected by Dr. Alexander Wetmore while engaged in work for the Biological Survey, Department of Agriculture, on the island bird reservations west of Hawaii.

The Laysan "finch" (*Telespyza cantans*) is a member of an interesting family of birds that is restricted to the Hawaiian Islands. The specimens sent by Doctor Wetmore were all collected on Midway Island. Some wood ducks, canvasbacks, and a collared lizard were also received by transfer from the Biological Survey.

The Bureau of Fisheries, Department of Commerce, donated a collection of 18 snakes of 5 species that were collected by Mr. F. E. Hare at the biological station, Manchester, Iowa.

REMOVALS.

Surplus mammals and birds to the number of 66 were sent away during the year in exchange to other zoological gardens. Among these were the following mammals that had been born and reared in the park: Siberian tiger, 4; dingo, 1; red deer, 8; barasingha, 3; hog deer, 2; Rocky Mountain sheep, 1; bison, 1; hippopotamus, 1; Trinidad agouti, 2; rhesus monkey, 1.

A number of animals on deposit were returned to owners.

The death rate has again been kept at a very low mark. Except for the loss of nine kangaroos from necrobacillosis, there has been no evidence of contagion among the animals. Some of the losses of animals long in the collection are as follows: A sandhill crane (*Grus mexicana*) received January 30, 1899, died April 17, 1923, from enteritis, after 24 years, 2 months, and 18 days in the park. The great black-backed gull, "Billy," well known to thousands of park visitors because of his long residence and sociable nature, died April 13, 1923. "Billy" came to the park from Labrador on November 22, 1905, and had thus been on exhibition for 17 years, 4 months, and 22 days. A male of the northern wild cat (*Lynx uinta*) received September 3, 1907, died of old age on December 30, 1922, 15 years, 3 months, and 27 days after his arrival. A female guanaco received January 20, 1908, died of disseminated tumors, after 14 years, 8 months, and 26 days in the park, on October 16, 1922. The South American condor, male, received October 31, 1908, died June 15, 1923, 14 years, 7 months, and 15 days after arrival. The cause of death, apparently, was lead poisoning, the bird having in some manner swallowed a piece of lead of considerable size. A female llama received March 14, 1908, died of anemia, July 25, 1922, after a life of 14 years, 4 months, and 11 days in the park. A male barasingha deer (*Cervus duvaucelii*) received October 1, 1908, died January 10, 1923, 14 years, 3 months, and 9 days after arrival. A female rhea (*Rhea americana*) received October 8, 1909, died May 1, 1923, after 13 years, 6 months, and 23 days in the collection. A female brown macaque (*Macaca speciosa*) received July 30, 1910,

d May 26, 1923, of broncho-pneumonia, after a life in the park of years, 9 months, and 26 days. A boatbill heron (*Cochlearius hlearius*) received September 28, 1910, died from congestion of lungs, 12 years, 6 months, and 18 days later, on April 15, 1923. e mate of this bird, received with it, is still living. A female odhouse's wolf (*Canis frustror*), born in the park April 17, 1911, d at an age of 11 years, 3 months, and 15 days, on August 1, 1922. vo male Madagascar weavers (*Foudia madagascariensis*), received ne 28, 1912, died on September 9 and October 14, 1922, respecely; a record of 10 years, 3 months, and 16 days, for one of the ds.

One of the most serious losses of the year was that of the female looping crane (*Grus americanus*), which died of aspergillosis on ril 16, 1923. The bird had always appeared in good health up shortly before its death; it was still comparatively young, and d been in the collection since April 13, 1914, a period of nine years d three days. It is perhaps doubtful if this rare species will er again be on exhibition in the park. Other serious losses inde a female Rocky Mountain goat, June 13, 1923, metritis; nt anteater, October 29, 1922; red ouakari monkey (*Cacajao rubindus*), April 24, 1923; frogmouth, November 1, 1922, tapeworm festation; and the Indian jabiru, March 29, 1923, from gastroeritis.

As heretofore, postmortem examinations were made in most cases the pathological division of the Bureau of Animal Industry. fteen examinations were made by Dr. Adolph H. Schultz, of the rnegie Institution, Laboratory of Embryology, and one by specists at St. Elizabeths Hospital, Department of the Interior. e following list shows the results of autopsies, the cases being anged by groups:

CAUSES OF DEATH.

MAMMALS.

Marsupialia: Gastritis, 1; gastroenteritis, 1; necrobacillosis, 9; accident, 2.

Carnivora: Pneumonia, 1; enteritis, 3; gastroenteritis and parasitism, 1; ernal hemorrhage, 1; goitre and internal hemorrage, 1; no cause found, 1.

Rodentia: Hypernephroma, 1; disseminated tumor, 1.

Primates: Bronchopneumonia, 1; tuberculosis, 1; enteritis, 2; streptococcus ection, 1; internal hemorrhage, 1; congestive apoplexy, 1; cage paralysis, 1; nition, 1.

Artiodactyla: Pneumonia and metritis, 1; tuberculosis, 3; pleurisy, 1; enitis, 1; gastroenteritis, 2; disseminated tumor, 1; malnutrition, 1; anemia, accident, 1.

Edentata: Pneumonia, 1; pericarditis, 1.

BIRDS.

Ratitæ: Enteritis, 1; accident, 2.

Ciconiiformes: Congestion of lungs, 1; enteritis, 1; gastroenteritis, 1; no cause found, 3.

Anseriformes: Tuberculosis, 1; gastritis, 1; enteritis, 1; inflammation of ceca, 1; no cause found, 4.

Falconiformes: Lead poisoning, 1; no cause found, 1.

Galliformes: No cause found, 1.

Gruiformes: Aspergillosis, 2; enteritis, 2.

Charadriiformes: Tuberculosis, 1; enteritis, 1; no cause found, 1.

Psittaciformes: Enteritis, 1.

Coraciiformes: Aspergillosis, 1; tapeworm infestation, 1.

Passeriformes: No cause found, 1.

A total of 48 specimens—11 mammals, 20 birds, and 17 reptiles—of special scientific value, were transferred after death to the United States National Museum. A number of eggs of rare birds were also transferred to the Museum. At the request of the Carnegie Laboratory of Embryology, Johns Hopkins Medical School, Baltimore, 27 specimens, mostly mammals, were delivered to that institution for anatomical purposes. One mammal was sent to St. Elizabeths Hospital, Washington, D. C., for special study of the brain. A few skins of cage birds were saved for the reference collection at the park.

ANIMALS IN THE COLLECTION JUNE 30, 1923.

MAMMALS.

MARSUPIALIA.

Virginia opossum (*Didelphis virginiana*)	4
Australian opossum (*Trichosurus vulpecula*)	2
Flying phalanger (*Petaurus breviceps*)	8
Brush-tailed rock wallaby (*Petrogale penicillata*)	2
Rufous-bellied wallaby (*Macropus billardierii*)	9
Black-faced kangaroo (*Macropus melanops*)	2
Wallaroo (*Macropus robustus*)	2
Red kangaroo (*Macropus rufus*)	6
Wombat (*Phascolomys mitchelli*)	1

CARNIVORA.

Kadiak bear (*Ursus middendorffi*)	2
Alaska Peninsula bear (*Ursus gyas*)	4
Yakutat bear (*Ursus dalli*)	1
Kidder's bear (*Ursus kidderi*)	2
European bear (*Ursus arctos*)	5
Grizzly bear (*Ursus horribilis*)	1
Apache grizzly (*Ursus apache*)	1
Himalayan bear (*Ursus thibetanus*)	1
Black bear (*Ursus americanus*)	8

CARNIVORA—continued.

Cinnamon bear (*Ursus americanus cinnamomum*)	2
Florida bear (*Ursus floridanus*)	1
Glacier bear (*Ursus emmonsii*)	1
Sun bear (*Helarctos malayanus*)	1
Sloth bear (*Melursus ursinus*)	1
Polar bear (*Thalarctos maritimus*)	2
Dingo (*Canis dingo*)	3
Eskimo dog (*Canis familiaris*)	2
Gray wolf (*Canis nubilus*)	6
Timber wolf (*Canis occidentalis*)	1
Texas red wolf (*Canis rufus*)	1
Coyote (*Canis latrans*)	4
Red fox (*Vulpes fulva*)	10
Kit fox (*Vulpes velox*)	2
Great-eared fox (*Otocyon megalotis*)	1
Magellan fox (*Cerdocyon magellanicus*)	1
Gray fox (*Urocyon cinereoargenteus*)	3
Cacomistle (*Bassariscus astutus*)	1
Panda (*Ailurus fulgens*)	2
Raccoon (*Procyon lotor*)	19
Florida raccoon (*Procyon lotor elucus*)	2
Gray coatimundi (*Nasua narica*)	1
Red coatimundi (*Nasua nasua*)	1
Kinkajou (*Potos flavus*)	2

CARNIVORA—continued.

Inkajou (*Potos flavus az-*	
----------	1
ra barbara) ----------	2
adger (*Taxidea taxus*) ----	1
tted skunk (*Spilogale am-*	
----------	1
tter (*Lutra canadensis*	
----------	3
(*Paradoxurus hermaphro-*	
----------	2
mongoose (*Helogale par-*	
----------	1
(*Proteles cristatus*) ------	1
na (*Crocuta crocuta*) -----	1
na (*Hyæna hyæna*) ------	1
etah (*Acinonyx jubatus*) --	2
s *leo*) ----------	5
r (*Felis tigris*) ----------	1
tiger (*Felis tigris longi-*	
----------	2
elis pardus) ----------	1
an leopard (*Felis pardus*	
) ----------	1
lis onca) ----------	1
elot (*Felis pardalis brasil-*	
----------	2
rd (*Felis uncia*) ----------	1
ma (*Felis azteca*) ----------	2
on (*Felis hippolestes*) ----	1
(*Lynx canadensis*) ----------	1
ld cat (*Lynx uinta*) ------	2
Lynx rufus) ----------	2
pard (*Neofelis nebulosa*) --	1

PINNIPEDIA.

sea-lion (*Zalophus cali-*	
) ----------	2

RODENTIA.

(*Marmota monax*) -------	3
not (*Marmota flaviventris*	
----------	1
(*Cynomys ludovicianus*) ---	5
uirrel (*Ammospermophilus*	
----------	1
Eutamias neglectus) ------	8
rel (*Sciurus carolinensis*) -	3
cet mouse (*Perognathus*	
perniger) ----------	1
cket mouse (*Perognathus*	
----------	1
rat (*Dipodomys specta-*	
----------	2
oo rat (*Perodipus ordii*) --	2
hite-footed mouse (*Pero-*	
icopus aridulus) ----------	1
mouse (*Onychomys leu-*	
----------	6
rcupine (*Hystrix africæ-*	
----------	1
ipine (*Acanthion brachy-*	
----------	2
ne (*Coendou mexicanum*) -	1

RODENTIA—continued.

Coypu (*Myocastor coypus*) ----------	2
Central American paca (*Cuniculus*	
paca virgatus) ----------	1
Mexican agouti (*Dasyprocta mexi-*	
cana) ----------	1
Sooty agouti (*Dasyprocta fuliginosa*) -	1
Speckled agouti (*Dasyprocta punc-*	
tata) ----------	2
Panama agouti (*Dasyprocta punctata*	
isthmica) ----------	1
Azara's agouti (*Dasyprocta azaræ*) ---	2
Trinidad agouti (*Dasyprocta rubrata*) -	3
Crested agouti (*Dasyprocta cristata*) -	1
Yellow-rumped agouti (*Dasyprocta*	
lucifer cayennæ) ----------	1
Peruvian guinea pig (*Cavia tschudii*	
pallidior) ----------	1
Guinea pig (*Cavia porcellus*) ----------	5
Capybara (*Hydrochærus hydrochæris*) -	2

LAGOMORPHA.

Domestic rabbit (*Oryctolagus cunicu-*	
lus) ----------	15

EDENTATA.

Two-toed sloth (*Cholœpus didactylus*) -	1

PRIMATES.

Black lemur (*Lemur macaco*) --------	2
Fulvous lemur (*Lemur fulvus*) -------	2
Gray spider monkey (*Ateles geoffroyi*) -	2
Mexican spider monkey (*Ateles neg-*	
lectus) ----------	2
Three-banded douroucouli (*Aotus tri-*	
virgatus) ----------	1
Brown woolly monkey (*Lagothrix in-*	
fumata) ----------	1
White-throated capuchin (*Cebus capu-*	
cinus) ----------	4
Pale capuchin (*Cebus unicolor*) ------	2
Weeping capuchin (*Cebus apella*) -----	2
Brown capuchin (*Cebus fatuellus*) ----	2
Azara's capuchin (*Cebus azaræ*) ------	1
Titi monkey (*Saimiri sciureus*) ------	5
Chacma (*Papio porcarius*) ----------	1
Anubis baboon (*Papio cynocephalus*) -	1
East African baboon (*Papio ibeanus*) -	1
Mandrill (*Papio sphinx*) ----------	1
Drill (*Papio leucophæus*) ----------	1
Moor macaque (*Cynopithecus maurus*) -	1
Barbary ape (*Simia sylvanus*) ------	2
Japanese macaque (*Macaca fuscata*) --	2
Pig-tailed monkey (*Macaca nemes-*	
trina) ----------	1
Burmese macaque (*Macaca andaman-*	
ensis) ----------	1
Rhesus monkey (*Macaca rhesus*) -----	22
Bonnet monkey (*Macaca sinica*) -----	1
Crab-eating macaque (*Macaca irus*) --	1
Javan macaque (*Macaca mordax*) ----	4
Black mangabey (*Cercocebus aterri-*	
mus) ----------	1

PRIMATES—continued.

Sooty mangabey (*Cercocebus fuliginosus*)	2
Hagenbeck's mangabey (*Cercocebus hagenbecki*)	1
White-collared mangabey (*Cercocebus torquatus*)	1
Green guenon (*Lasiopyga callitrichus*)	2
Vervet guenon (*Lasiopyga pygerythra*)	2
Mona (*Lasiopyga mona*)	4
Roloway guenon (*Lasiopyga roloway*)	1
Chimpanzee (*Pan satyrus*)	1
Orang-utan (*Pongo pygmæus*)	1

ARTIODACTYLA.

Wild boar (*Sus scrofa*)	1
Wart-hog (*Phacochœrus æthiopicus*)	1
Collared peccary (*Pecari angulatus*)	2
Hippopotamus (*Hippopotamus amphibius*)	2
Bactrian camel (*Camelus bactrianus*)	2
Arabian camel (*Camelus dromedarius*)	1
Guanaco (*Lama guanicoe*)	8
Llama (*Lama glama*)	7
Fallow deer (*Dama dama*)	5
Axis deer (*Axis axis*)	3
Hog deer (*Hyelaphus porcinus*)	7
Sambar (*Rusa unicolor*)	2
Barasingha (*Rucervus duvaucelii*)	6
Burmese deer (*Rucervus eldii*)	1
Japanese deer (*Sika nippon*)	19
Red deer (*Cervus elaphus*)	12
Kashmir deer (*Cervus hanglu*)	2
Bedford deer (*Cervus xanthopygus*)	6
American elk (*Cervus canadensis*)	7
Virginia deer (*Odocoileus virginianus*)	9
Panama deer (*Odocoileus chiriquensis*)	1
Black-tailed deer (*Odocoileus columbianus*)	2
Blesbok (*Damaliscus albifrons*)	2
White-tailed gnu (*Connochætes gnou*)	1

ARTIODACTYLA—continued.

Brindled gnu (*Connochætes taurinus*)	1
Lechwe (*Onotragus leche*)	1
Sable antelope (*Egocerus niger*)	1
Indian antelope (*Antilope cervicapra*)	3
Nilgai (*Boselaphus tragocamelus*)	3
East African eland (*Taurotragus oryx livingstonii*)	2
Tahr (*Hemitragus jemlahicus*)	5
Mountain goat (*Oreamnos americanus*)	5
Aoudad (*Ammotragus lervia*)	2
Rocky Mountain sheep (*Ovis canadensis*)	4
Arizona mountain sheep (*Ovis canadensis gaillardi*)	1
Mouflon (*Ovis musimon*)	2
Barbados sheep (*Ovis aries*)	2
Greenland musk ox (*Ovibos moschatus wardi*)	2
Zebu (*Bos indicus*)	1
Yak (*Poëphagus grunniens*)	5
American bison (*Bison bison*)	13
Indian buffalo (*Bubalus bubalis*)	3

PERISSODACTYLA.

Malay tapir (*Tapirus indicus*)	1
Brazilian tapir (*Tapirus terrestris*)	2
Grant's zebra (*Equus quagga granti*)	1
Grevy's zebra (*Equus grevyi*)	1
Zebra-horse hybrid (*Equus grevyi caballus*)	1
Zebra-ass hybrid (*Equus grevyi asinus*)	3

PROBOSCIDEA.

Abyssinian elephant (*Loxodonta africana oxyotis*)	1
Sumatran elephant (*Elephas sumatranus*)	2

BIRDS.

RATITE.

South African ostrich (*Struthio australis*)	6
Somaliland ostrich (*Struthio molybdophanes*)	2
Nubian ostrich (*Struthio camelus*)	2
Rhea (*Rhea americana*)	1
Sclater's cassowary (*Casuarius philipi*)	1
Emu (*Dromiceius novæhollandiæ*)	2

PROCELLARIIFORMES.

Sooty shearwater (*Puffinus griseus*)	1

CICONIIFORMES.

American white pelican (*Pelecanus erythrorhynchos*)	7
European white pelican (*Pelecanus onocrotalus*)	2
Roseate pelican (*Pelecanus roseus*)	2
Australian pelican (*Pelecanus conspicillatus*)	2

CICONIIFORMES—continued.

Brown pelican (*Pelecanus occidentalis*)	9
Water-turkey (*Anhinga anhinga*)	1
Florida cormorant (*Phalacrocorax auritus floridanus*)	4
Gannet (*Sula bassana*)	1
Great white heron (*Ardea occidentalis*)	7
Goliath heron (*Ardea goliath*)	1
American egret (*Casmerodius egretta*)	5
Snowy egret (*Egretta candidissima*)	1
Black-crowned night heron (*Nycticorax nycticorax nævius*)	45
Boatbill (*Cochlearius cochlearius*)	1
White stork (*Ciconia ciconia*)	2
Black stork (*Ciconia nigra*)	1
Lesser adjutant (*Leptoptilus javanicus*)	1
Wood ibis (*Mycteria americana*)	3
Straw-necked ibis (*Carphibis spinicollis*)	1

CONIIFORMES—continued.

s (*Threskiornis æthiopicus*)	3
ied ibis (*Threskiornis melanus*)	3
ı ibis (*Threskiornis strictı-*)	2
ı (*Guara alba*)	11
is (*Guara rubra*)	4
poonbill (*Ajaia ajaja*)	2
flamingo (*Phœnicopterus*	1

ANSERIFORMES.

ed merganser (*Mergus ser-*	2
Anas platyrhynchos)	16
k (*Anas rubripes*)	19
black duck (*Anas superciliı-*	2
Chaulelasmus streperus)	3
luck (*Eunetta falcata*)	2
widgeon (*Mareca penelope*)	5
Mareca americana)	4
ged teal (*Nettion carolinense*)	15
teal (*Nettion crecca*)	10
l (*Nettion formosum*)	6
ed teal (*Querquedula dis-*	9
(*Querquedula querquedula*)	6
teal (*Querquedula cyanop-*	1
(*Spatula clypeata*)	4
Dafila acuta)	8
ı (*Aix sponsa*)	10
duck (*Dendronessa galeri-*	13
·k (*Marila valisineria*)	18
pochard (*Marila ferina*)	4
Marila americana)	14
d duck (*Marila collaris*)	1
ck (*Marila fuligula*)	4
up duck (*Marila affinis*)	5
aup duck (*Marila marila*)	11
duck (*Marila nyroca*)	1
pochard (*Metopiana pepo-*	4
goose (*Chenalopex ægyptia-*	8
se (*Chloëphaga leucoptera*)	1
goose (*Nesochen sandvicen-*	2
· (*Chen hyperboreus*)	2
ow goose (*Chen hyperboreus*	2
(*Chen cærulescens*)	1
ted goose (*Anser albifrons*)	4
white-fronted goose (*Anser gambeli*)	3
(*Anser fabalis*)	2
goose (*Eulabeia indica*)	2
ose (*Branta canadensis*)	11
goose (*Branta canadensis* ıi)	7

ANSERIFORMES—continued.

Cackling goose (*Branta canadensis minima*)	2
Brant (*Branta bernicla glaucogastra*)	10
Barnacle goose (*Branta leucopsis*)	7
Spur-winged goose (*Plectropterus gambensis*)	2
Muscovy duck (*Cairina moschata*)	1
Pied goose (*Anseranas semipalmata*)	2
Black-bellied tree duck (*Dendrocygna autumnalis*)	6
Eyton's tree duck (*Dendrocygna eytoni*)	4
White-faced tree duck (*Dendrocygna viduata*)	1
Mute swan (*Cygnus gibbus*)	2
Whistling swan (*Olor columbianus*)	1
Black swan (*Chenopis atrata*)	2

FALCONIFORMES.

California condor (*Gymnogyps californianus*)	3
Turkey vulture (*Cathartes aura*)	3
Black vulture (*Coragyps urubu*)	1
King vulture (*Sarcoramphus papa*)	2
Secretary bird (*Sagittarius serpentarius*)	1
Griffon vulture (*Gyps fulvus*)	1
African black vulture (*Torgos tracheliotus*)	1
Cinereous vulture (*Aegypius monachus*)	2
Caracara (*Polyborus cheriway*)	2
Wedge-tailed eagle (*Uroaëtus audax*)	2
Golden eagle (*Aquila chrysaëtos*)	7
White-bellied sea eagle (*Cuncuma leucogaster*)	2
Bald eagle (*Haliæetus leucocephalus*)	13
Alaskan bald eagle (*Haliæetus leucocephalus alascanus*)	3
Broad-winged hawk (*Buteo platypterus*)	1
Red-shouldered hawk (*Buteo lineatus*)	3
Red-tailed hawk (*Buteo borealis*)	6
Sparrow hawk (*Falco sparverius*)	7

GALLIFORMES.

Curassow (*Crax daubentoni*)	1
Razor-billed curassow (*Mitu mitu*)	2
Penelope (*Penelope boliviana*)	1
Guan (*Ortalis albiventris*)	1
Chachalaca (*Ortalis vetula*)	1
Peafowl (*Pavo cristatus*)	30
Peacock pheasant (*Polyplectron bicalcaratum*)	1
Silver pheasant (*Gennæus nycthemerus*)	5
Ring-necked pheasant (*Phasianus torquatus*)	10
Bobwhite (*Colinus virginianus*)	1
Gambel's quail (*Lophortyx gambelli*)	2
Valley quail (*Lophortyx californica vallicola*)	1

GRUIFORMES.

East Indian gallinule (*Porphyrio calvus*)	5
Black-tailed moor-hen (*Microtribonyx ventralis*)	2
American coot (*Fulica americana*)	1
South Island weka rail (*Ocydromus australis*)	3
Short-winged weka (*Ocydromus brachypterus*)	2
Earl's weka (*Ocydromus earli*)	1
Sandhill crane (*Grus mexicana*)	1
Little brown crane (*Grus canadensis*)	5
White-necked crane (*Grus leucauchen*)	1
Indian white crane (*Grus leucogeranus*)	1
Lilford's crane (*Grus lilfordi*)	2
Sarus crane (*Grus collaris*)	1
Australian crane (*Grus rubicunda*)	2
Demoiselle crane (*Anthropoides virgo*)	4
Crowned crane (*Balearica pavonina*)	1
White-backed trumpeter (*Psophia leucoptera*)	2
Kagu (*Rhynochetos jubatus*)	4

CHARADRIIFORMES.

Lapwing (*Vanellus vanellus*)	8
Yellow-wattled lapwing (*Lobivanellus indicus*)	1
Pacific gull (*Gabianus pacificus*)	2
Great black-backed gull (*Larus marinus*)	5
Herring gull (*Larus argentatus*)	8
Silver gull (*Larus novæhollandiæ*)	16
Laughing gull (*Larus atricilla*)	2
Victoria crowned pigeon (*Goura victoria*)	2
Australian crested pigeon (*Ocyphaps lophotes*)	5
Bronze-wing pigeon (*Phaps chalcoptera*)	3
Marquesan dove (*Gallicolumba rubescens*)	2
Wonga-wonga pigeon (*Leucosarcia picata*)	8
Wood pigeon (*Columba palumbus*)	7
Mourning dove (*Zenaidura macroura*)	2
Necklaced dove (*Spilopelia tigrina*)	4
Zebra dove (*Geopelia striata*)	8
Bar-shouldered dove (*Geopelia humeralis*)	1
Inca dove (*Scardafella inca*)	2
Cuban ground dove (*Chæmepelia passerina aflavida*)	1
Green-winged dove (*Chalcophaps indica*)	1
New Guinea green dove (*Chalcophaps chrysochlora*)	3
Ringed turtle-dove (*Streptopelia risoria*)	1
Fruit pigeon (*Lamprotreron superba*)	1

CUCULIFORMES.

Road-runner (*Geococcyx californian*	

PSITTACIFORMES.

Kea (*Nestor notabilis*)	
Cockateel (*Calopsitta novæhollandi*	
Roseate cockatoo (*Kakatoe rose pilla*)	
Bare-eyed cockatoo (*Kakatoe gym pis*)	
Leadbeater's cockatoo (*Kakatoe l beateri*)	
White cockatoo (*Kakatoe alba*)	
Sulphur-crested cockatoo (*Kakatoe lerita*)	
Great red-crested cockatoo (*Kak moluccensis*)	
Cassin's macaw (*Ara auricollis*)	
Mexican green macaw (*Ara mexican*	
Blue-and-yellow macaw (*Ara rauna*)	
Red-and-blue-and-yellow macaw (macao)	
Hahn's macaw (*Diopsittaca hahni*	
White-eyed paroquet (*Aratinga cophthalmus*)	
Petz's paroquet (*Eupsittula can laris*)	
Golden-crowned paroquet (*Eupsitt aurea*)	
Weddell's paroquet (*Eupsittula w dellii*)	
Blue-winged parrotlet (*Psittacula serina*)	
Yellow-winged paroquet (*Tirica ri cens*)	
Golden paroquet (*Brotogeris ch osema*)	
Tovi paroquet (*Brotogeris jugulari*	
Orange-winged paroquet (*Brotog chiriri*)	
Yellow-naped parrot (*Amazona a palliata*)	
Mealy parrot (*Amazona farinosa*)	
Orange-winged parrot (*Amazona a sonica*)	
Blue-fronted parrot (*Amazona æstiv*	
Red-crowned parrot (*Amazona vir genalis*)	
Double yellow-head parrot (*Amaz oratrix*)	
Yellow-headed parrot (*Amazona och cephala*)	
Festive parrot (*Amazona festiva*)	
Lesser white-fronted parrot (*Amaz albifrons nana*)	
Santo Domingo parrot (*Amaz ventralis*)	
Cuban parrot (*Amazona leuco phala*)	
Maximilian's parrot (*Pionus maxim iani*)	

ITTACIFORMES—continued.

rrot (*Pionus fuscus*)	2
ed parrot (*Pionus mens-*	
	3
n caique (*Pionites xantho-*	
	7
ed parrot (*Graydidascalus*	
rus)	1
ot (*Psittacus erithacus*)	1
a parrot (*Coracopsis nigra*)	1
sa parrot (*Coracopsis vasa*)	1
paroquet (*Platycercus ele-*	
	1
paroquet (*Platycercus exi-*	
	1
ed paroquet (*Polytelis mela-*	
	2
oquet (*Aprosmictus cyano-*	
	2
ed paroquet (*Conurus tor-*	
	1
paroquet (*Conurus nepalen-*	
	1
oquet (*Melopsittacus undu-*	
	27

CORACIIFORMES.

fisher (*Dacelo gigas*)	2
led hornbill (*Lophoceros*	
las)	2
rl (*Strix varia*)	7
l (*Nyctea nyctea*)	1
vl (*Otus asio*)	2
reech owl (*Otus choliba*)	1
ned owl (*Bubo virginianus*)	8
(*Bubo bubo*)	1
barn owl (*Tyto perlata*	
la)	6
an (*Ramphastos ariel*)	1

PASSERIFORMES.

ie rock (*Rupicola rupicola*)	1
d hill-tit (*Mesia argen-*	
	2
hill-tit (*Liothrix luteus*)	7
eted laughing-thrush (*Gar-*	
rectoralis)	2
d bulbul (*Otocompsa leu-*	
	3
blackbird (*Turdus merula*)	2
w-shrike (*Gymnorhina tibi-*	
	2
wer-bird (*Ptilonorhynchus*	
s)	1
raven (*Corvus corax*)	1
crow (*Corvus coronoides*)	1
crow (*Corvus brachyrhyn-*	
	1
(*Corvus monedula*)	1
ay (*Cissilopha yucatanica*)	1
(*Cyanocitta cristata*)	3
(*Xanthoura luxuosa*)	1

PASSERIFORMES—continued.

Australian gray jumper (*Struthidea cinerea*)	1
Starling (*Sturnus vulgaris*)	9
Shining starling (*Lamprocorax metallicus*)	4
Laysan finch (*Telespyza cantans*)	36
Crimson tanager (*Ramphocelus dimidiatus*)	1
Blue tanager (*Thraupis cana*)	1
Paradise whydah (*Steganura paradisea*)	1
Shaft-tailed whydah (*Tetrænura regia*)	2
Napolean weaver (*Pyromelana afra*)	1
Red-billed weaver (*Quelea quelea*)	1
Madagascar weaver (*Foudia madagascariensis*)	1
Fire finch (*Lagonosticta senegala*)	1
Strawberry finch (*Amandava amandava*)	8
Nutmeg finch (*Munia punctulata*)	5
White-headed nun (*Munia maja*)	4
Black-headed nun (*Munia atricapilla*)	1
Java finch (*Munia oryzivora*)	4
White Java finch (*Munia oryzivora*)	2
Masked grassfinch (*Poëphila personata*)	7
Black-faced Gouldian finch (*Poëphila gouldiæ*)	4
Red-faced Gouldian finch (*Poëphila mirabilis*)	5
Diamond finch (*Steganopleura guttata*)	5
Zebra finch (*Taniopygia castanotis*)	20
Cut-throat finch (*Amadina fasciata*)	3
Vera Cruz red-wing (*Agelaius phœniceus richmondi*)	1
Purple grackle (*Quiscalus quiscula*)	3
Greenfinch (*Chloris chloris*)	3
European goldfinch (*Carduelis carduelis*)	4
Bramblefinch (*Fringilla montifringilla*)	5
European siskin (*Spinus spinus*)	1
Mexican goldfinch (*Astragalinus psaltria mexicanus*)	1
House finch (*Carpodacus mexicanus frontalis*)	2
San Lucas house finch (*Carpodacus mexicanus ruberrimus*)	2
Canary (*Serinus canarius*)	22
Green singing finch (*Serinus icterus*)	1
Slate-colored junco (*Junco hyemalis*)	2
White-throated sparrow (*Zonotrichia albicollis*)	3
Song sparrow (*Melospiza melodia*)	1
San Diego song sparrow (*Melospiza melodia cooperi*)	3
Saffron finch (*Sicalis flaveola*)	1
Seed-eater (*Sporophila gutturalis*)	2
Nonpareil (*Passerina ciris*)	5
Cardinal (*Cardinalis cardinalis*)	1

REPTILES.

Alligator (*Alligator mississippiensis*)	68	Snapping turtle (*Chelydra serpentina*)	7
Marine iguana (*Amblyrhynchus cristatus*)	1	Rossignon's snapping turtle (*Chelydra rossignonii*)	1
Gila monster (*Heloderma suspectum*)	6	Maw's turtle (*Dermatemys mawii*)	4
Gould's monitor (*Varanus gouldii*)	8	Musk-turtle (*Kinosternon odoratum*)	1
Rock python (*Python molurus*)	2	South American musk-turtle (*Kinosternon scorpioides*)	5
Regal python (*Python reticulatus*)	1	Pennsylvania musk-turtle (*Kinosternon subrubrum*)	2
Diamond python (*Python spilotes*)	4	Wood turtle (*Clemmys insculpta*)	1
Anaconda (*Eunectes murinus*)	2	South American terrapin (*Nicoria punctularia*)	1
Boa constrictor (*Constrictor constrictor*)	5	Painted turtle (*Chrysemys picta*)	3
Spreading adder (*Heterodon contortrix*)	7	Cooter (*Pseudemys scripta*)	1
Blacksnake (*Coluber constrictor*)	7	Central American cooter (*Pseudemys ornata*)	3
Blue racer (*Coluber constrictor flaviventris*)	7	Box-tortoise (*Terrapene carolina*)	2
Chicken snake (*Elaphe quadrivittata*)	1	Gopher tortoise (*Gopherus polyphemus*)	4
Corn snake (*Elaphe guttata*)	1	Mexican gopher tortoise (*Gopherus berlandieri*)	1
Pilot blacksnake (*Elaphe obsoleta*)	1	Desert tortoise (*Gopherus agassizii*)	1
Pine snake (*Pituophis melanoleucus*)	4	Duncan Island tortoise (*Testudo ephippium*)	1
Bull-snake (*Pituophis sayi*)	8	Indefatigable Island tortoise (*Testudo porteri*)	1
Water snake (*Natrix sipedon*)	4	Albemarle Island tortoise (*Testudo vicina*)	2
Western water snake (*Natrix sipedon fasciata*)	2	South American tortoise (*Testudo denticulata*)	7
Garter snake (*Thamnophis sirtalis*)	9		
Moccasin (*Agkistrodon piscivorus*)	2		
Copperhead (*Agkistrodon mokasen*)	2		
Banded rattlesnake (*Crotalus horridus*)	1		
Diamond-back rattler (*Crotalus adamanteus*)	3		

STATEMENT OF THE COLLECTION.

Accessions during the year.

	Mammals.	Birds.	Reptiles.	Total.
Presented	47	153	66	266
Born and hatched in National Zoological Park	51	29	.....	80
Received in exchange	27	21	.....	48
Purchased	15	66	27	108
Transferred from other Government departments	.....	40	19	59
Captured	.....	.....	1	1
Deposited	12	6	32	50
Total	152	315	145	612

SUMMARY.

Animals on hand July 1, 1922	1,681
Accessions during the year	612
Total animals handled	2,293
Deduct loss (by exchange, death, and return of animals on deposit)	525
Animals on hand June 30, 1923	1,768

Class.	Species.	Individuals.
nals	184	498
	271	1,061
les	43	194
Total June 30, 1923	498	1,768

he number of species on exhibition on June 30 is 16 more, and the l number of animals is 87 more than in any previous year.

VISITORS.

he total number of visitors to the park, for the fiscal year, as ermined by count and estimate, was 2,393,428. This is 229,174 ve the official record for 1922, and makes the fourth year in suc- sion that the attendance has exceeded 2,000,000. The greatest ndance in any one month was 330,700 in May, 1923.

he attendance by months was as follows:

1921.		1922.	
	192, 400	January	57, 452
ust	216, 500	February	80, 558
tember	251, 800	March	232, 715
ber	215, 500	April	275, 052
ember	148, 400	May	330, 700
ember	87, 051	June	304, 900

chools, classes, and other organizations visiting the park during year numbered 171, with a total of 14,185 individuals.

IMPROVEMENTS.

he complete reconstruction of the wolf and fox dens below the lion pool was finished early in the year. The quarters for these mals are now much more comfortable and sanitary than before immensely improved in appearance. The outdoor cages for sus and other monkeys were all repaired, covered with new wire, vided with suitable water and sewer facilities, and generally put first-class condition. Repairs were made to the ostrich en- ure, safety guards of electrically welded wire were placed along fence bordering the walk in front of the main bear dens, and nerous minor repairs were made to cages and enclosures. In so as was possible with the limited funds, necessary painting was e.

he principal construction for the year, however, has been the tinuation of work on the recently graded area in the west-central t of the park, between the great flight cage and the hospital

building. This work was commenced seven years ago but was discontinued during the war. It is greatly to be hoped that it may be completed during the current year. After building a new road from the hospital to the scales, near the Rocky Mountain sheep inclosure, over the edge of the fill previously made, the old winding road was abandoned and there was available a large area of flat ground suitable for paddocks. Four extra large yards were designed along the automobile road, where species commonly kept in breeding herds may be shown. One yard has been especially designed for Rocky Mountain goats and a miniature mountain of flint bowlders has been constructed within it. The other large yards bordering the automobile road have been prepared for red deer, barasingha deer, and Japanese deer. On the south side, bordering the walk passing the great flight cage for birds, are seven paddocks with shelters, designed especially for Indian buffaloes, tahr goats, aoudads, axis deer, and similar species. The water-buffalo yard has been provided with a large tank for bathing, and the tahr and aoudad yards with large rock piles. The axis deer shelter includes a closed room of commodious size for breeding females, as this species commonly brings forth the young in winter, when the weather out of doors is unfavorable for young fawns. Passing directly through the center of this system of yards from east to west is a service road along which all of the shelter houses have been built. This system places the retreats for animals at the rear of each yard, away from the public, and, after proper planting, makes the buildings comparatively inconspicuous. It also simplifies care and the shifting or transfer of animals without actual capture. At the end of the year the yards and shelters were practically completed; the principal work remaining undone includes sidewalks, parking space, tree boxes, guard rails, and other minor accessories.

ALTERATIONS OF BOUNDARIES.

With the approval on January 23, 1923, of the second deficiency bill, there was available $8,000 for the purchase of the strip of land between the park and Adams Mill Road between Ontario Road and Clydesdale Place. The completion of this purchase adds about 8,000 feet of land to the area of the park and protects the entrance at Adams Mill Road from unsightly development on one side. A new danger that threatens the beauty of this entrance way to the park has, however, most unexpectedly arisen. On March 4, 1923, an act of Congress was passed and approved dissolving the cemetery association controlling the burial ground bordering the Zoological Park on the south between Adams Mill Road and Rock Creek. The

trustees named in the bill are authorized to transfer the bodies interred in this old cemetery and to sell the land. The permanent highways plan of the District of Columbia shows a proposed road across this property from Adams Mill Road to Calvert Street Bridge. It will be necessary in order to protect this section of the park, especially the beautiful roadway leading down from the Adams Mill Road entrance, to acquire that portion of the cemetery lying between this proposed roadway and the park boundary. It has been suggested that the permanent highways plan be modified, and that the proposed road across the old cemetery be made from Adams Mill Road at the corner of the Zoological Park to join Waterside Drive at Calvert Street Bridge. This would greatly reduce the area to be purchased for park purposes and amply protect the interests of the public.

IMPORTANT NEEDS.

Restaurant.—As pointed out in recent reports, a suitable restaurant building remains the most urgent need of the park. The old refreshment stand was constructed many years ago of the cheapest materials. At the present time it is in a bad condition and is wholly inadequate to serve the needs of the public. The refreshment booth at Connecticut Avenue, on land recently transferred to the Government, should also be replaced by a new and more sightly structure. The increased income from rental of these two concessions will well repay for the construction of buildings adequate for the service of the constantly increasing number of visitors.

Bird house.—The valuable collection of rare and interesting birds now the property of the Government remains poorly housed for exhibition purposes. Because of the great interest taken in this division of the collection and the numbers of beautiful and curious birds from all parts of the world that are presented to the park, the collection is constantly growing. The old bird house was built as a temporary structure many years ago and, in addition to being in a bad condition, is entirely too small either to accommodate the crowds of interested visitors or to show to advantage the birds. Many rare specimens, as a matter of fact, can not regularly be placed on exhibition because of lack of room. It is greatly to be hoped that a new bird house may be provided for in the near future.

Funds for purchase of animals.—The park has never had sufficient funds for the purchase of animals. Rare specimens are from time to time offered for sale that would fill distinct gaps in the collection, but because of lack of funds for their purchase these are frequently lost to the park. Two conspicuous forms of mammal life—the Indian rhinoceros and giraffe—may be mentioned as examples. Oppor-

tunities to purchase good specimens of these spectacular species do not often come, but because of lack of money for their purchase the park has had to decline the few offered in recent years. In order that special opportunities may be taken advantage of promptly, there should be available from year to year a reasonable sum for the purchase and transportation of animals.

Respectfully submitted.

N. HOLLISTER, *Superintendent.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 7.

EPORT ON THE ASTROPHYSICAL OBSERVATORY.

IR: The Astrophysical Observatory was conducted under the fol-ing passage of the independent offices appropriation act, approved e 12, 1922:

strophysical Observatory: For maintenance of the Astrophysical Observ-y, under the direction of the Smithsonian Institution, including assist-, purchase of necessary books and periodicals, apparatus, making necessary rvations in high altitudes, repairs and alterations of buildings, and miscel-ous expenses, $15,500.

he observatory occupies a number of frame structures within an osure of about 16,000 square feet south of the Smithsonian ad-istration building at Washington, and also a cement observing ion and frame cottage for observers on a plot of 10,000 square leased from the Carnegie Solar Observatory, on Mount Wilson, if.

new solar observing station on Mount Harqua Hala, Ariz., was ted in July, 1920, at the expense of funds donated for the purpose Mr. John A. Roebling, of Bernardsville, N. J., and this station been occupied as a solar radiation observing station by the Astro-sical Observatory since October, 1920.

he present value of the buildings and equipment for the Astro-sical Observatory, owned by the Government, is estimated at 000. This estimate contemplates the cost required to replace the fit for the purposes of the investigation.

ork at Washington.—No observations were attempted at Washing-

Mr. Fowle, Mrs. Bond, and the director, as much of his time as sible, were engaged in computations necessary (1) to the search for ematic errors in the work of Mount Harqua Hala, Ariz., and the lication of carefully determined corrections thereto; (2) to the lication of a comparison of two years of observations at Mount qua Hala, Ariz., and Mount Montezuma, Chile (see Monthly ather Review, February, 1923); (3) to the preparation of a new of curves for use from January 1, 1923, in the short method of r constant determination at Montezuma, Chile; (4) to the search systematic errors and the application of carefully determined ections to Montezuma results on the new basis; (5) to the reduc-of observations made at Mount Wilson in 1922 on the form of solar spectrum energy curve and on the spectrum energy curves en of the brighter stars.

was apparent from the comparison, just referred to, between results of the two field stations that they were in close accord on sun's variation. But the Chile station was employing in its

reductions the results of work prior to 1913 on the distribution of radiation in the solar energy spectrum; while the Arizona station was employing results of 1920. Moreover, the pyranometer in use in Chile was of an old type unsuitable to the work. Furthermore, the sharpness of definition of the spectrum employed at Mount Harqua Hala was inferior to that employed at Montezuma. It seemed probable that to remedy these defects and put the two stations on equality in all respects would lead to even closer harmony in their results, although it meant a revision of the whole scheme of reductions at both stations, with a redetermination of the systematic errors at each. This is very important, for the solar variations rarely exceed 5 per cent, and are mainly less than 2 per cent. It taxes the best observing to reveal them. These were the circumstances which led to the large computing program stated in the preceding paragraph. It has resulted in putting the two stations on equal footing in every possible way. They are now capable of turning out jointly the best results on the solar variation that our experience can suggest a means to attain.

The instrument maker, Mr. Kramer, has been on detached service for almost the entire year, engaged in the preparation, according to plans of the director, of two solar radiation outfits ordered, respectively, by a committee of interested gentlemen in Australia and by the Government of Argentina. The Australian outfit was finished and sent forward in June, 1923. The Argentine outfit will go forward about December, 1923.

Field work at Mount Wilson.—Messrs. Abbot and Aldrich observed on Mount Wilson in the months of July, August, and the fore part of September, 1922. They redetermined the form of the solar spectrum energy curve. For this investigation they employed several different prisms, including two of rock salt. Their object in this course was to vary the procedure, as far as possible, so as to get several independent checks on the results. Upon reduction, all of the results of 1922 came into good accord with one another, and confirmed the work of 1920 very satisfactorily. It now appears that a large part of the earlier work, on which results published in Volumes III and IV of the Annals were based, was injured in accuracy by the employment of a quartz prism of inferior transparency. If this quartz prism work is rejected, the remaining early work is in fair accord with that of 1920 and 1922. The new results, therefore, now are accepted, and were published immediately after their completion. (Smithsonian Miscellaneous Collections, Vol. 74, No. 7, 1923.)

In the course of this solar energy spectrum work, the observers made solar energy curves with rock-salt prisms at different hours of the day, extending as far down the spectrum as to wave-length 14 microns. As yet these observations are not reduced.

A long and difficult task was undertaken in the observation of the ·ismatic energy spectra of 10 of the brighter stars in the focus of e 100-inch reflector on Mount Wilson. After much discourage- ent in preparation of apparatus and preliminary trials, successful sults were obtained on three nights. The apparatus included a ecial bolometer and a special galvanometer. Changes of tem- rature of about one one-hundred-millionth of a degree Centigrade ere observable, and electric currents of about 10^{-12} amperes were ad with the galvanometer of 10 ohms resistance. So sensitive was e device that it was affected to an almost incredible extent by ectromagnetic induction. It even appeared that the operation of ectric power in Pasadena and Los Angeles was effective to cause sturbance through the transmission lines up the mountain though t off at the power house a thousand feet away from the telescope. ccordingly, best observations were made after 2 o'clock in the orning. The results are given in the paper just cited.

Field work in Arizona and Chile.—The Mount Harqua Hala sta- on observed solar variation throughout the year under the efficient rection of Mr. A. F. Moore, assisted until April, 1923, by Mr. F. A. reeley. Mr. P. E. Greeley, who had been at Montezuma, exchanged aces with his brother and reported at Harqua Hala about June 1923.

Mr. L. B. Aldrich assumed the directorship at Montezuma about ecember 20, 1922, succeeding Mr. L. H. Abbot. At both stations e results of 1923 have been very numerous. They had not yet been itically compared at the close of the period covered by this report.

RESULTS OF THE WORK ON SOLAR RADIATION.

As long ago as 1903, we found in the observations then being con- ıcted in Washington some indication of a variation of the sun's ıtput of radiation. These indications were pursued for several ·ars at Mount Wilson and Mount Whitney, and became so strong at, in 1911 and 1912, expeditions were maintained in Algeria, incident with one at Mount Wilson, to test whether the supposed lar variations were really of local character. The results seemed ·nfirmatory of real solar changes. The work went on in summer onths at Mount Wilson, with gradual improvements up to 1920.

In the meantime Mr. H. H. Clayton, forecaster of the meteoro- ·gical service of Argentina, had communicated evidence, at first by tter and later in two Smithsonian publications (Effect of Short eriod Variations of Solar Radiation on the Earth's Atmosphere, mithsonian Miscellaneous Collections, Vol. 68, No. 3, 1917; and ariation in Solar Radiation and the Weather, Smithsonian Mis- ellaneous Collections, Vol. 71, No. 3, 1920) showing dependence of he weather of various parts of the world on fluctuations of solar adiation. These indications he has now amplified and recently

elaborately published (H. H. Clayton, "World Weather," Macmillan Co., New York, 1923). But even at the beginning, to one trained by the late Secretary S. P. Langley to hope that some time some connection would appear between solar and terrestrial changes, Mr. Clayton's work was very interesting.

At the writer's suggestion, Secretary Walcott approved the expenditure of accrued interest from the Hodgkins Fund to undertake all-year-round observations of solar variation in a cloudless climate. The Great War hindered the expedition, but it went forward in 1918 to Calama, Chile, a station chosen on the advice and extensive manuscript data furnished by Dr. Walter Knoche, formerly in charge of the weather service of Chile.

By that time Mr. Clayton's researches had led him to believe that actual forecasts might advantageously be based on solar radiation work. Accordingly, soon after the establishment of the Chile station, arrangements were made to telegraph its results to Buenos Aires, and a system of forecasting based thereon has actually been in use in Argentina for several years. Some of its results are quoted in the book of Mr. Clayton, just cited.

The work almost immediately attracted the favorable attention of Mr. John A. Roebling. By his advice and financial assistance, the Mount Wilson work was transferred to a more cloudless locality for all-year-round observing at Mount Harqua Hala, Ariz., and also the Calama work was transferred to a higher station, Montezuma, outside the dust and smoke of Calama and Chuquicamata, which had been serious inconveniences.

During these many years, we had plodded on in hope of a satisfying fruition of our labors. Many signs there were that the solar radiation varies sufficiently to be of importance in terrestrial concerns. But they were of the nature of incompletely verified evidences of various sorts, all pointing the same way, but none in itself conclusive. With the continuous all-year-round occupation of the two first-rate stations, made possible by Mr. Roebling's generosity, the matter could be put, for the first time, to a rigorous test. And now we have made this test. It is conclusive and proves the substantial character of solar variation. Hereafter we walk by sight where hitherto we walked by faith.

In the publication cited (Monthly Weather Review, February, 1923) we show that in over 100 days, when results were obtained at both Arizona and Chile, the average deviation of one station from the other is 0.68 per cent, thus indicating a probable error of one day's observation at one station of 0.41 per cent. The average deviation for two years of monthly mean values between the two stations is 0.3 per cent, and this small value would doubtless be considerably smaller if the individual days of the several months had always been

incident. Although in opposite hemispheres, where winter at one ation falls in summer at the other station, there is no evidence of asonal divergence between the two stations. They unite in showing lar variation. Indeed the march of the monthly mean values from ovember, 1921, to September, 1922, in which they agree closely, gives e most conspicuous instance of long-continued solar change in a ven direction which we have ever noted. The reader may compare with the four years of monthly means curve given at the top of e illustration.

In short, there can not be, we think, any longer a reasonable ques- on that the sun varies, or that our observations can reveal these ariations satisfactorily. It is now a question for meteorologists hether these variations are of importance in weather forecasting. s we report these satisfying conclusions, it ought to be reported at ie same time that the financial support furnished the Astrophysical bservatory by the Government would not have sufficed to obtain iese results without the aid of the Hodgkins fund of the Smith- onian Institution, and the generous financial support and wise ounsel of Mr. John A. Roebling.

Although done a few days after the close of the period covered by iis report, it will be fitting in this connection to mention some pre- minary observations on changes of the appearance of the sun ccompanying changes in its output of radiation. Being at Pasa- ena in July, 1923, the director availed himself of permission given y Director Adams to examine two years of record prints from rect photographs and hydrogen (Hα) spectroheliograms of the in made at the Mount Wilson Solar Observatory. Four general iles or principles seemed to be well established by the comparisons ade.

1. When increased sun-spot activity appears, either by new spot roups forming on the visible solar disk, by the growth of spots ready present, or by the coming on of a new group due to the lar rotation, then on that very day the solar constant value in- eases.

2. When a sun-spot group is carried by the solar rotation across ie central diameter of the visible disk, then the solar constant alue declines, and usually has a minimum on the day following ich central transit.

3. When many spot groups, faculae, or long strings of dark ydrogen flocculi indicate that great solar activity is prevailing, the lar constant is high.

4. When a long quiescent period occurs in solar activity, the solar nstant values steadily decline.

These rules connecting the solar radiation with the sun's visible pearance seem to hold some promise of quantitative development.

Possibly there may be found some formula for computing solar constant values by the aid of direct solar photographs and hydrogen and calcium spectroheliograms, which may enable the solar radiation values to be expressed with fair approximation for the past quarter of a century. If so, it will be of great advantage.

PERSONNEL.

In addition to the changes of personnel above mentioned, Mr. William H. Hoover was temporarily engaged as assistant beginning March 12, 1923. He is in training to be director of the proposed solar radiation observatory of the Argentine Government at La Quiaca, Argentina. Mr. Hoover spent some time in Washington and some upon Mount Harqua Hala, Ariz. Mrs. Arline Leary served as temporary computer, beginning April 16, 1923. Both of these assistants were paid from funds given for the purpose by Mr. John A. Roebling.

SUMMARY.

A comparison of two years of results on the variation of solar radiation observed at Mount Harqua Hala, Ariz., and Montezuma, Chile, shows close accord between the stations and agreement between them in showing forth solar changes of both long and short interval types. Monthly mean values of both stations indicate a long continued decline of the output of solar radiation beginning in November, 1921, and continuing at least until September, 1922. This is in some respects the most remarkable solar change on record. Great improvements have been made at both stations, and their observations have been put as far as possible on exactly equal footing. It is believed that beginning January 1, 1924, there will be still closer accord in their results. Definite correspondences have been observed between the variation of the sun's radiation and the variation of the most marked of its visible features. Several new determinations of the form of the sun's energy spectrum distribution curve confirm the similar work of 1920, and lead to a revision of the results of earlier work published in Volumes III and IV of the Observatory Annals. Energy spectra of 10 of the brighter stars were observed at the focus of the 100-inch telescope on Mount Wilson by means of a special spectrobolometric apparatus. Temperature differences of approximately one one-hundred-millionth of a degree centigrade were measured in this investigation. Solar radiation outfits have been prepared for Australia and Argentina, to be installed in the year 1923.

Respectfully submitted.

C. G. ABBOT, *Director.*

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 8.

REPORT ON THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

SIR: I have the honor to submit the following report on the operations of the United States Regional Bureau of the International Catalogue of Scientific Literature for the fiscal year ending June 30, 1923.

As the success of this international enterprise, in common with all undertakings dependent on international cooperation, is necessarily controlled by world politics, it has been the hope of all interested in the International Catalogue that each year conditions would develop which would make reorganization possible and justify resumption of publication. As international affairs, both political and financial, are apparently still far removed from normalcy, the affairs of the catalogue are practically in the same condition as they were in 1922. As was noted in the last annual report, the Smithsonian Institution submitted a statement of its position to an international convention held in Brussels in July, 1922, to consider the affairs of the catalogue. This statement carried with it a suggestion whose object was to keep the international organization in existence, it being generally conceded that should the countries who are now and have been for the past 22 years officially cooperating in the support of the enterprise be for any reason disunited it would be practically impossible to ever regain their interest and support. Though these suggestions were printed in the last report of this bureau, they are in part reprinted here, as on them were based the resolutions to continue the regional bureaus until reorganization could be accomplished:

It is the belief of the Smithsonian Institution:

1. That a classified subject and author index to the literature of science is needed.

2. That no better means exists of attaining the end sought than by carrying out the original plan of the International Catalogue based on international cooperation, guided by uniform rules and schedules modified to meet changes in the several sciences, and, when possible, broadened in scope to include the allied technical branches of these sciences.

3. That every effort should be made to cooperate with all similar enterprises, including abstracting agencies, existing or projected, not only to prevent duplication of labor, but also to better serve the demands of those in need of bibliographic aid.

4. That on account of abnormal conditions still controlling publishing costs and monetary exchange, it is probable that actual publication can not be at

present resumed unless financial aid is had from some source outside the present organization; however, it is believed,

5. That the international organization should be kept in being through mutual agreement to continue the work of the regional bureaus until such time as it may be economically possible to resume publication. When that time arrives the stock of complete sets already published should be advertised for sale at a price within the reach of the smaller libraries and institutions, many of whom, although desiring this unique reference work, were prevented from subscribing on account of the high original cost.

Were the price reduced even to one-fourth of the original, stock in hand at that figure represents a sufficient sum to meet all outstanding obligations and leave a surplus for working capital.

This statement was read at the opening meeting of the convention and after a short discussion the following resolutions were adopted:

That the convention is of opinion that the international organization should be kept in being through mutual agreement to continue as far as possible the work of the regional bureaus until such time as it may be economically possible to resume publication.

That it be referred to the executive committee to consider and after full consultation with interested bodies to make proposals as to the form of future publication and to report with some definite scheme to a meeting of the international council to be summoned as soon as it appears possible that the publication can be resumed.

The executive committee referred to consists of one representative from each of the following named countries: England, France, Italy, Japan, Holland, Denmark and the United States.

At this convention Prof. Henry E. Armstrong, chairman of the executive committee, who is the only one of the founders of the catalogue remaining in the organization, submitted a report from which the following items have been copied:

At the outset there was great enthusiasm for the work among those who were its promoters in the different countries and great care was taken in the preparation of the scheme; the organization that has been developed, in consequence, has worked with remarkable smoothness. Bureaus have been established in 32 countries, and the relations between these and the central office in London have always been of the most harmonious character possible.

Most convincing proof has been obtained that international cooperation to such an end is not merely possible but may be made most effective. That all that was aimed at has been accomplished need not be contended; but the obvious shortcomings of the catalogue have been almost entirely due to lack of funds. To have established a system so widespread in its operations is no small achievement in itself.

I am profoundly convinced that the principles underlying the preparation of the catalogue are sound and that an international system of cataloguing scientific literature is proved to be feasible and that its advantages are incontestible.

It is the first work of the kind to be carried out in such detail and over so long a period—more than 20 years. To abandon the enterprise after so satisfactory a foundation has been laid would be to sacrifice an unique experience gained at the expense of great labor.

From the foregoing facts and opinions and from the experience f all who have occasion to use bibliographical aids, in matters elating to science and all its branches, it is apparent—

1. That there is a need for recording for the purpose of present and future eference the published results of scientific achievements.

2. That such a record to be comprehensive and complete must be internaional in its scope and therefore must necessarily be prepared through interational cooperation.

3. That excepting for the organization known as the International Catalogue f Scientific Literature no such agency exists.

4. That, though not claiming perfection, the International Catalogue up to ıe beginning of the late war was and had been for some 14 years answering ıe demands and requirements of an international authors' list and classified ıbject index to the world's literature of science.

5. That the principal defects of the International Catalogue were lack of pital; lack of complete cooperation with enterprises simi'ar in nature though ore limited in scope.

All of these defects had been recognized and their correction proded for by authority vested in the executive committee whose plans ere frustrated by the beginning of war and consequent financial ollapse. It is believed and maintained by the advocates of the ıternational Catalogue that the foundation as it at present exists, ı spite of its financial difficulties, is the best and only one in existence a which to build a new and more far-reaching organization, tresassing on no occupied fields, though cooperating for the common ood with all enterprises having the same or similar objects in view.

While many projects have been proposed and are now being advoated, none either in plan or scope compare with the International atalogue and none have the international recognition and official upport necessary for success. The capital needed to refinance the nterprise is so small in comparison with the results to be attained hat it would be strange indeed if in this day of large ideas and large nancial outlays this most promising bond between and aid for the inkers and workers of all nations should be allowed to remain so ippled that its wealth of information must continue to be inaccesble because unpublished.

Respectfully submitted.

LEONARD C. GUNNELL,
Assistant in Charge.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 9.

REPORT ON THE LIBRARY.

SIR: I have the honor to submit the following report on the activities of the library of the Smithsonian Institution for the fiscal year ended June 30, 1923.

Much has been accomplished, it is felt, toward better library service. Principal original articles, appearing in scientific and technical periodicals received for the Smithsonian deposit, have been brought to the attention of members of the staff, through the continued preparation of a daily list, circulated among heads of scientific bureaus under the Smithsonian Institution. Books in the employees' library have been rendered more accessible by their transfer to the present quarters. Better protection has been provided for the older accession books and other records by their removal to darker and less frequented quarters, and congestion has thus been relieved in the receiving room and in the filing cases. The number of publications loaned during the year reached a total of 12,076, and fully as many were consulted without being taken out.

Many rare volumes that otherwise would have required purchase at great expense have been received in exchange or by gift. Back numbers of publications required to complete sets have been requested in exchange from societies and organizations abroad, and many have generously responded during the year by presenting valuable material, hitherto not available in American libraries. Special attention has been given to the transmittal of Smithsonian publications in exchange.

FOREIGN PERIODICALS.

A classified list has been prepared during the year of foreign periodicals, exclusive of annuals and irregular serials, and the following table of subjects and languages is submitted:

ubject.	English.	French.	Germanic.	Italian.	Spanish.
.....	4	7	4	1	3
.....	19	19	4	6	11
.....	17	9	6	2	1
.....	10	15	1	3	3
.....	5	3	.....	3	1
.....	10	4	4	1	4
.....	7	8	4	2	14
.....	13	5	1	1	2
.....	9	9	6	3	1
.....	7	7	7	.....	.....
.....	10	7	4	1	5
.....	8	5	2	.....	17
.....	38	11	6	3	11
.....	5	4	7	1	1
.....	18	15	9	2	2
.....	10	13	3	2	4
.....	6	5	8	5	5
.....	3	1	3	3	.....
.....	3	3	3	3	.....
.....	8	15	8	4	10
.....	11	4	4	4	3
.....	4	1	2	1	2
.....	4	4	6	1	1
.....	1	5	7	2	1
.....	3	3	12	1	1
.....	25	27	15	13	16
.....	5	8	7	1	.....
.....	263	217	143	69	119

BIBLIOGRAPHIC RESEARCHES.

volume of the "Bibliography of Aeronautics," covering 17 to 1919, inclusive, compiled by the assistant librarian ısonian Institution, Paul Brockett, was issued during the National Advisory Committee for Aeronautics. The first ıis bibliography was issued in 1910 as volume 55 of the Miscellaneous Collections.

ıve been made for a number of years to compile a cata- Watts de Peyster collection, Napoleon Bonaparte, and hy of scientific and technical periodicals, but up to the ɔars it has not been possible to devote much time to :s. During the past year, however, Mr. Condit has been g together a catalogue of the rarer historical works in e Peyster collection, and to prepare a classified list of ign periodicals received for the library. The latter work ɔe confused with the larger plan, under way for many e compilation of a list of publications of learned societies l in libraries throughout the United States. The com-

pletion of this project does not seem possible without the expenditure of a large sum of money, which is not at present available.

In the following reports of libraries administered under the Smithsonian Institution, a decrease will be noted in accessions, the natural consequence of the decline in publication abroad and the fact that war accumulations were taken care of last year.

SMITHSONIAN MAIN LIBRARY.

The additions to the main library, numbering 5,719, have been transmitted to the Smithsonian deposit in the Library of Congress, where they are made available to the public. Documents of foreign Governments, received in exchange for Smithsonian publications, have been transmitted in accordance with the established practice, without stamping or recording. The number of publications accessioned has now reached 893,307.

Theses were received from universities and institutes of technology abroad located at the following places: Amsterdam, Basel, Berlin, Bern, Bonn, Breslau, Clermont, Copenhagen, Delft, Dresden, Freiburg, Ghent, Giessen, Halle, Helsingfors, Karlsruhe, Kiel, Königsberg, Leipzig, Lund, Rostock, Tokyo, Tübingen, Utrecht, Zürich.

A number of universities have temporarily discontinued the practice of sending the complete theses, owing to the increased cost of printing, and are now submitting them in abstract only.

Missing parts of incomplete sets were requested in exchange, as in previous years, with an increased percentage secured, although there was a decline both in wants requested and in wants secured. Of 2,174 publications requested, 921 were secured, a percentage of 43.2 as against 39.1 for last year.

SMITHSONIAN OFFICE LIBRARY.

The number of publications loaned from the office library was 2,756. The accessions numbered 378, of which 347 were volumes and the remainder parts and pamphlets. Attention should be called to the fact that no binding has been done for the office library during the last six years, owing to lack of funds.

The progress of the cataloguing in the general library catalogue of the Smithsonian Institution, kept in the office library, is shown by the following statistics:

	1922–23.	1921–22.
Volumes catalogued	6,341	6,502
Volumes recatalalogued	109	55
Charts catalogued	198	160
Typed cards	3,870	4,243
Library of Congress cards filed	858	592
New titles added to author catalogue	2,299	1,614

the special collections in the office library, mention has been usly made of activities in connection with the aeronautical col-ı, the Watts de Peyster collection, and the employees' library. ɔn should also be made of the collection deposited by Mrs. ɛs D. Walcott, who has kindly extended the period of deposit. frequently consulted by employees of the Smithsonian In-on.

UNITED STATES NATIONAL MUSEUM.

widespread interest of members of the staff and friends museum is shown by the material donated during the year. g the donors are Messrs. H. E. Boving, A. H. Clark, F. W. ɛ, W. H. Dall, Whitman Cross, C. G. Gilbert, O. P. Hay, Hopkins, Aleš Hrdlička, Emmanuel de Margerie, W. R. ı, W. de C. Ravenel, C. W. Richmond, S. A. Rohwer, W. ɜ, and Charles D. Walcott. The gifts of Doctor Dall to the ıal library of mollusks numbered 168 titles.

ıable material has continued to come in exchange from mu- research organizations, and scientific societies at home and l.

receipts of the year numbered 1,489 volumes and 2,796 pam-, bringing the total of books and other material in the library 160,560. Of these there are 62,170 accessioned volumes. New cards were made for 239 periodicals, and 13,314 parts were d.

ɔh of the library's reference service is rendered through the ıal libraries, under the immediate custody of members of the fic and administrative staff, located as follows:

NATURAL HISTORY BUILDING.

an archeology.
pology.
ɣ.
ɔbrate paleontology.
als.
invertebrates.
ls.
Mollusks.
Old World archeology.
Paleobotany.
Physical anthropology.
Property clerk's office.
Reptiles and batrachians.
Superintendent's office.
Vertebrate paleontology.

ARTS AND INDUSTRIES BUILDING.

stration.
strative assistant's office.
ɾ.
ıical technology.
Medicine.
Mineral technology.
Photography.
Textiles.
Wood technology.

SMITHSONIAN BUILDING AND ANNEX.

Botany.	Taxidermy.
Editor's office.	War library.
Graphic arts.	

It will be seen that the use of the library can not be estimated upon the basis of its loans alone. Many volumes are consulted in the general library, the technological library, and the various sectional libraries without being taken out. References are frequently requested over the telephone by members of the staff of the Museum and other Government bureaus, and every effort is made to comply with these requests. Of the 9,220 loans made during the year, 5,191 were to the sectional libraries, and 1,929 were borrowed from other libraries.

The subject catalogue of the library has been increased by 4,400 cards. The arrangement of accumulated cards from the Concilium Bibliographicum, received since the close of the war, has been progressing and is well under way.

ASTROPHYSICAL OBSERVATORY LIBRARY.

The requirements of the staff of the Astrophysical Observatory, both in Washington and at the various stations, in the way of reference service, are met through the Astrophysical Observatory Library. Loans are made through the Smithsonian Office Library. There were added during the year 113 volumes, 27 parts of volumes, and 54 pamphlets.

BUREAU OF AMERICAN ETHNOLOGY LIBRARY.

The activities of the Bureau of American Ethnology Library are covered in the report of the chief of that bureau. The library is administered under his immediate direction.

NATIONAL ZOOLOGICAL PARK LIBRARY.

The library of the National Zoological Park, located three miles distant from the Smithsonian building, contains supplemental material of importance in the fields of zoology and park administration. The increase for the year, as shown by accessions, was six volumes and four parts.

NATIONAL GALLERY OF ART LIBRARY.

The National Gallery of Art Library is rapidly growing. Since the gallery has begun the issuance of a separate series of publications there has been a noteworthy increase in the material that has been received in exchange. There were accessioned 128 volumes and 213

ıls. Periodical parts numbered 740. The gift of the year rthy of mention is the large, handsomely illustrated volume ngs in the Bachstitz Gallery at The Hague.

FREER GALLERY OF ART LIBRARY.

ınection with the art collections in the Freer building, a rary was brought together by Mr. Freer. A catalogue of the ntained in it has not been incorporated in the general library ıstitution. There have been, however, 137 accessions in the and 10 of these were added during the year. Many other belonging to the Smithsonian Institution have been depos- hat building, to be retained indefinitely, most of these being : works and volumes relating to Oriental art.

SUMMARY OF RECEIPTS AND ACCESSIONS.

ımber of pieces of mail received during the year was 25,553, ı 6,272 publications were Government documents, and were he Library of Congress, in accordance with the established

Additions to the library, as shown by the accession records, ı below.

Library.	Volumes.	Other publications.	Total.
l Observatory	113	81	194
of Art	10	1	11
lery of Art	128	213	341
logical Park	6	4	10
deposit	4,461	1,258	5,719
office	347	31	378
s National Museum	1,499	2,796	4,295
	6,554	4,384	10,938

:tfully submitt d.

PAUL BROCKETT,
Assistant Librarian.

HARLES D. WALCOTT,
ecretary, Smithsonian Institution.

APPENDIX 10.

REPORT ON THE PUBLICATIONS.

SIR: I have the honor to submit the following report on the publications of the Smithsonian Institution and its branches during the year ending June 30, 1923:

The Institution proper published during the year 9 papers in the series of Miscellaneous Collections, 1 annual report and pamphlet copies of 30 articles in the general appendix to this report, and 3 special publications. The Bureau of American Ethnology published 2 bulletins and 2 annual reports. The United States National Museum issued 1 annual report, 2 volumes of proceedings, 37 separates from the proceedings, 6 bulletins, 2 parts of bulletins, and 4 parts of volumes in the series of Contributions from the United States National Herbarium. The National Gallery of Art issued 1 volume in the series of Catalogues of Collections.

Of these publications there were distributed during the year 139,666 copies, which includes 130 volumes and separates of the Smithsonian Contributions to Knowledge, 18,801 volumes and separates of the Smithsonian Miscellaneous Collections, 25,229 volumes and separates of the Smithsonian annual reports, 3,016 Smithsonian special publications, 72,529 volumes and separates of the various series of National Museum publications, 17,694 publications of the Bureau of American Ethnology, 816 publications of the National Gallery of Art, 1,309 volumes of the Annals of the Astrophysical Observatory, 31 reports on the Harriman Alaska expedition, 74 reports of the American Historical Association, and 37 publications presented to but not issued directly by the Smithsonian Institution or its branches.

SMITHSONIAN MISCELLANEOUS COLLECTIONS.

Of the Smithsonian Miscellaneous Collections, volume 56, 1 paper was issued; volume 67, 1 paper; volume 74, 6 papers; volume 76, 1 paper; in all, 9 papers, as follows:

VOLUME 56.

No. 19. The Silver Disk Pyrheliometer (Reprint, revised). By C. G. Abbot. July 10, 1922. 10 pp., 1 pl. (Publ. 2008.)

VOLUME 67.

No. 8. Cambrian Geology and Paleontology. IV, No. 8. Nomenclature of Some Post Cambrian and Cambrian Cordilleran Formations (2). By Charles D. Walcott. March 5, 1923. pp. 457–476. (Publ. 2673.)

VOLUME 74.

No. 2. New Timaline Birds from the East Indies. By Harry C. Oberholser. September 27, 1922. 13 pp. (Publ. 2674.)

No. 3. Remains of Mammals from Caves in the Republic of Haiti. By Gerrit S. Miller, jr. October 16, 1922. 8 pp. (Publ. 2707.)

No. 4. Remains of Birds from Caves in the Republic of Haiti. By Alexander Wetmore. October 17, 1922. 4 pp. (Publ. 2708.)

No. 5. Explorations and Field-work of the Smithsonian Institution in 1922. May 4, 1923. 153 pp., 145 figs. (Publ. 2711.)

No. 6. Designs of Prehistoric Pottery from the Mimbres Valley, New Mexico. By J. Walter Fewkes. May 29, 1923. 47 pp., 140 figs. (Publ. 2713.)

No. 7. The Distribution of Energy in the Spectra of the Sun and Stars. By C. G. Abbot, F. E. Fowle, and L. B. Aldrich. June 4, 1923. 30 pp. (Publ. 2714.)

VOLUME 76.

No. 1. Some Practical Aspects of Fuel Economy. By Carl W. Mitman. June 2, 1923. 19 pp. (Publ. 2715.)

In press at close of year.

VOLUME 76.

No. 2. History of Electric Light. By Henry Schroeder. (Publ. 2717.)

No. 3. On the Fossil Crinoid Family Catillocrinidae. By Frank Springer. (Publ. 2718.)

No. 4. Report on Cooperative Education and Research Work Carried on by the Smithsonian Institution and its Branches. (Publ. 2719.)

No. 5. The Telescoping of the Cetacean Skull. By Gerrit S. Miller, jr. (Publ. 2720.)

No. 6. Descriptions of New East Indian Birds of the Families Turdidae, Sylviidae, Pycnonotidae, and Muscicapidae. By Harry C. Oberholser. (Publ. 2721.)

No. 7. Description of an Apparently New Toothed Cetacean from South Carolina. By Remington Kellogg. (Publ. 2723.)

SMITHSONIAN ANNUAL REPORTS.

REPORT FOR 1921.

The Annual Report of the Board of Regents for 1921 was received from the Public Printer in June, 1923.

Annual Report of the Board of Regents of the Smithsonian Institution, showing operations, expenditures, and condition of the Institution for the year ending June 30, 1921. xi+638 pp., 113 pls. (Publ. 2675.)

The general appendix to this report contains the following papers:

The daily influence of astronomy, by W. W. Campbell.
Cosmogony and stellar evolution, by J. H. Jeans.
The diameters of the stars, by A. Danjon.
Isotopes and atomic weights, by F. W. Aston.

Modifying our ideas of nature: The Einstein theory of relativity, by Henry Norris Russell.
The alkali problem in irrigation, by Carl S. Scofield.
An outline of geophysical-chemical problems, by Robert B. Sosman.
The yielding of the earth's crust, by William Bowie.
The age of earth, by the Right Hon. Lord Rayleigh, W. J. Sollas, J. W. Gregory, and Harold Jeffreys.
The department of geology of the U. S. National Museum, by George P. Merrill.
Some observations on the natural history of Costa Rica, by Robert Ridgway.
The historic development of the evolutionary idea, by Branislav Petronievics.
The heredity of acquired characters, by L. Cuénot.
Breeding habits, development, and birth of the opossum, by Carl Hartman.
Some preliminary remarks on the velocity of migratory flight among birds, with special reference to the Palaearctic region, by R. Meinertzhagen.
A botanical reconnaissance in southeastern Asia, by A. S. Hitchcock.
Ant acacias and acacia ants of Mexico and Central America, by W. E. Safford.
The fall webworm, by R. E. Snodgrass.
Collecting insects on Mount Rainier, by A. L. Melander.
The science of man: Its needs and prospects, by Karl Pearson.
Pigmentation in the old Americans, with notes on graying and loss of hair, by Aleš Hrdlička.
Ancestor worship of the Hopi Indians, by J. Walter Fewkes.
The Indian in literature, by Herman F. C. Ten Kate.
Leopard men in the Naga Hills, by J. H. Hutton.
A new era in Palestine exploration, by Elihu Grant.
The alimentary education of children, by Marcel Labbé.
A fifty-year sketch history of medical entomology, by L. O. Howard.
Laid and wove, by Dard Hunter.
Lead, by Carl W. Mitman.
William Crawford Gorgas, by Robert E. Noble.

REPORT FOR 1922.

The report of the executive committee and proceedings of the Board of Regents of the Institution, and the report of the secretary, both forming part of the annual report of the Board of Regents to Congress, were issued in pamphlet form in December, 1922.

Report of the executive committee and proceedings of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1922. 10 pp. (Publ. 2710.)
Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1922. 125 pp. (Publ. 2709.)

The general appendix to this report, the manuscript of which went to the Government Printing Office a few days after the close of the fiscal year, contains the following articles:

Who will promote science? by C. G. Abbot.
Recent discoveries and theories relating to the structure of matter, by Karl Taylor Compton.
The architecture of atoms and a universe built of atoms, by C. G. Abbot.
Aeronautic research, by Joseph S. Ames.
Photosynthesis and the possible use of solar energy, by H. A. Spoehr.
Fogs and clouds, by W. J. Humphreys.

Some aspects of the use of the annual rings of trees in climatic study, by Prof. A. E. Douglass.

The age of the earth, by T. C. Chamberlin and others.

How deep is the ocean? by C. G. Abbot.

Two decades of genetic progress, by E. M. East.

Observations on a Montana beaver canal, by S. Stillman Berry.

The Republic of Salvador, by Paul C. Standley.

The tent caterpillar, by R. E. Snodgrass.

The life history and habits of the solitary wasp, *Philanthus gibbosus*, by Edward G. Reinhard.

The use of idols in Hopi worship, by J. Walter Fewkes.

Two Chaco Canyon pit houses, by Neil M. Judd.

Collections of Old World archeology in the United States National Museum, by I. M. Casanowicz.

The "Shake Religion" of Puget Sound, by T. T. Waterman.

Excavations at Askalon, by Prof. J. Garstang.

National efforts at home making, by F. H. Newell.

Ideals of the telephone service, by John J. Carty.

SPECIAL PUBLICATIONS.

The Smithsonian Institution (descriptive pamphlet). 7 pp.

Title page and contents of Volume 62, Smithsonian Miscellaneous Collections. (Publ. 2716.)

Title page and contents of Volume 72, Smithsonian Miscellaneous Collections. (Publ. 2706.)

PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM.

The publications of the National Museum are: (*a*) The annual report, (*b*) the Proceedings of the United States National Museum, and (*c*) the Bulletin of the United States National Museum, which includes the contributions from the United States National Herbarium. The editorship of these publications is vested in Dr. Marcus Benjamin.

During the year ending June 30, 1923, the Museum published 1 annual report, 2 volumes of proceedings, 6 complete bulletins, 2 parts of bulletins, 4 parts of volumes in the series Contributions from the United States National Herbarium, and 37 separates from the proceedings.

The issues of the bulletin were as follows:

Bulletin 100, volume 5. Contributions to the biology of the Philippine Archipelago and adjacent regions—Ophiurans of the Philippine seas and adjacent waters. By Rene Koehler.

Bulletin 120. The opalinid ciliate infusorians. By Maynard M. Metcalf.

Bulletin 121. Life histories of North American petrels and pelicans and their allies—Order Tubinares and order Steganopodes. By Arthur Cleveland Bent.

Bulletin 122. A monograph of the American shipworms. By Paul Bartsch.

Bulletin 123. Revision of the North American moths of the subfamily Eucosminae of the family Olethreutidae. By Carl Heinrich.

Bulletin 124. The type species of the genera of Chalcidoidea or Chalcid-flies. By A. B. Gahan and Margaret M. Fagan.

Bulletin 126. Life histories of North American wild fowl—Order Anseres (part). By Arthur Cleveland Bent.

Of the separate papers of the Contributions from the United States National Herbarium, the following were issued:

Volume 23, part 2. Trees and Shrubs of Mexico. (Fagaceae-Fabaceae). By Paul C. Standley.

Volume 24, part 2. Studies of tropical American ferns, No. 7. By William R. Maxon.

Volume 24, part 3. Key to the Genus Diplostephium, with Descriptions of New Species. By S. F. Blake.

Volume 24, part 4. Native Names and Uses of Some Plants of Eastern Guatemala and Honduras. By S. F. Blake.

Of the separates from the proceedings, 5 were from volume 61, 21 from volume 62, and 11 from volume 63.

PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY.

The editorial work of the Bureau of American Ethnology is under the direction of Mr. Stanley Searles, editor. During the year there were published two annual reports and two bulletins, as follows:

Thirty-fourth Annual Report. Accompanying papers: A Prehistoric Island Culture Area of America (Fewkes). 281 pp., 120 pls., 69 figs.

Thirty-seventh Annual Report. Accompanying paper: The Winnebago Tribe (Radin). 560 pp., 58 pls., 38 figs.

Bulletin 76. Archeological Investigations (Fowke). 204 pp., 45 pls., 37 figs.

Bulletin 77. Villages of the Algonquian, Siouan, and Caddoan Tribes west of the Mississippi (Bushnell). 211 pp., 55 pls., 12 figs.

There were in press or in preparation at the close of the year 4 annual reports and 5 bulletins, as follows:

Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians (Roth).

Thirty-ninth Annual Report. Accompanying paper: The Osage Tribe: The Rite of Vigil (La Flesche).

Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox Indian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society known as "Those Who Worship the Little Spotted Buffalo"; "The Traditional Origin of the Fox Society known as "The Singing-Around Rite" (Michelson).

Forty-first Annual Report. Accompanying paper: Social Organization and Social Usages of the Indians of the Creek Confederacy (Swanton).

Bulletin 78. Handbook of the Indians of California (Kroeber).

Bulletin 79. Blood Revenge, War, and Victory Feasts among the Jibaro Indians of Eastern Ecuador (Karsten).

Bulletin 80. Mandan and Hidatsa Music (Densmore).

Bulletin 81. Excavations in the Chama Valley, New Mexico (Jeancon).

Bulletin 82. Fewkes and Gordon Groups of Mounds in Middle Tennessee (Myer).

REPORT OF THE AMERICAN HISTORICAL ASSOCIATION.

The annual reports of the American Historical Association are transmitted by the association to the secretary of the Smithsonian Institution, and by him are communicated to Congress under provisions of the act of incorporation of the association.

The annual report for 1919 was still in press at the close of the year, and there were also in press the supplemental volumes entitled "Writings in American History," to the reports for 1919, 1920, and 1921.

REPORT OF THE NATIONAL SOCIETY, DAUGHTERS OF THE AMERICAN REVOLUTION.

The manuscript of the Twenty-fifth Annual Report of the National Society, Daughters of the American Revolution was transmitted to Congress according to law on December 28, 1922.

THE SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION.

The editor has continued to serve as secretary of the Smithsonian advisory committee on printing and publication. To this committee are referred for consideration and recommendation all manuscripts offered for publication by the Smithsonian Institution and its branches, and it also considers routine forms and other matters relating to printing and publication. Seven meetings were held during the year and 104 manuscripts were acted upon.

Respectfully submitted.

W. P. TRUE, *Editor.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

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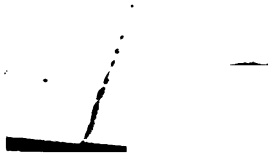
REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1924

(Publication 2791)

WASHINGTON
GOVERNMENT PRINTING OFFICE
1924



REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1924

(Publication 2791)

WASHINGTON
GOVERNMENT PRINTING OFFICE
1924

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THE SMITHSONIAN INSTITUTION

June 30, 1924

officer ex officio.—CALVIN COOLIDGE, President of the United States.

r.—WILLIAM HOWARD TAFT, Chief Justice of the United States.

of the Institution:
N COOLIDGE, President of the United States.
IAM HOWARD TAFT, Chief Justice of the United States.
LES EVANS HUGHES, Secretary of State.
EW W. MELLON, Secretary of the Treasury.
WINGATE WEEKS, Secretary of War.
AN F. STONE, Attorney General.
Y S. NEW, Postmaster General.
S D. WILBUR, Secretary of the Navy.
RT WORK, Secretary of the Interior.
Y CANTWELL WALLACE, Secretary of Agriculture.
ERT CLARK HOOVER, Secretary of Commerce.
S JOHN DAVIS, Secretary of Labor.

f the Institution:
IAM HOWARD TAFT, Chief Justice of the United States, Chancellor.
Y CABOT LODGE, Member of the Senate.
VSLEY STANLEY, Member of the Senate.
LL MCCORMICK, Member of the Senate.
RT JOHNSON, Member of the House of Representatives.
ALTON MOORE, Member of the House of Representatives.
ER H. NEWTON, Member of the House of Representatives.
E GRAY, citizen of Delaware.
LES F. CHOATE, Jr., citizen of Massachusetts.
Y WHITE, citizen of Washington, D. C.
RT S. BROOKINGS, citizen of Missouri.
V B. LAUGHLIN, citizen of Pennsylvania.
ERIC A. DELANO, citizen of Washington, D. C.

committee.—GEORGE GRAY, HENRY WHITE, FREDERIC A. DELANO.
of the Institution.—CHARLES D. WALCOTT.
Secretary.—C. G. ABBOT.
k.—HARRY W. DORSEY.
g and disbursing agent.—N. W. DORSEY.
W. P. TRUE.
librarian.—PAUL BROCKETT.
ent clerk.—JAMES G. TRAYLOR.
clerk.—J. H. HILL.

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June 30, 1924

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WALTER H. NEWTON, Member of the House of Representatives.
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ief clerk.—HARRY W. DORSEY.
counting and disbursing agent.—N. W. DORSEY.
itor.—W. P. TRUE.
sistant librarian.—PAUL BROCKETT.
pointment clerk.—JAMES G. TRAYLOR.
operty clerk.—J. H. HILL.

NATIONAL MUSEUM

Administrative assistant to the secretary, in charge.—W. DE C. RAVENEL.

NATIONAL GALLERY OF ART

Director.—WILLIAM H. HOLMES.

FREER GALLERY OF ART

Curator.—JOHN ELLERTON LODGE.

BUREAU OF AMERICAN ETHNOLOGY

Chief.—J. WALTER FEWKES.

INTERNATIONAL EXCHANGES

Chief clerk.—C. W. SHOEMAKER.

NATIONAL ZOOLOGICAL PARK

Superintendent.—N. HOLLISTER.

ASTROPHYSICAL OBSERVATORY

Director.—C. G. ABBOT.

REGIONAL BUREAU FOR THE UNITED STATES, INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

Assistant in charge.—LEONARD C. GUNNELL.

REPORT

OF THE

SECRETARY OF THE SMITHSONIAN INSTITUTION

CHARLES D. WALCOTT

FOR THE YEAR ENDING JUNE 30, 1924

To the Board of Regents of the Smithsonian Institution:

GENTLEMEN: I have the honor to submit herewith the customary annual report showing the activities and conditions of the Smithsonian Institution and its branches during the fiscal year ending June 30, 1924. The first 26 pages of the report contain an account of the affairs of the Institution proper, with brief abstracts of the work carried on by the various branches of the Institution, while appendixes 1 to 10 present somewhat more detailed summaries of the operations of the United States National Museum, the National Gallery of Art, the Freer Gallery of Art, the Bureau of American Ethnology, the International Exchanges, the National Zoological Park, the Astrophysical Observatory, the United States Regional Bureau of the International Catalogue of Scientific Literature, the Smithsonian Library, and of the publications of the Institution and its branches.

THE SMITHSONIAN INSTITUTION

THE ESTABLISHMENT

The Smithsonian Institution was created by act of Congress in 1846, according to the terms of the will of James Smithson, of England, who in 1826 bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." In receiving the property and accepting the trust Congress determined that the Federal Government was without authority to administer the trust directly, and therefore constituted an "establishment" whose statutory members are "the President, the Vice President, the Chief Justice, and the heads of the executive departments."

THE BOARD OF REGENTS

The affairs of the Institution are administered by a Board of Regents whose membership consists of "the Vice President, the Chief Justice, three Members of the Senate, and three Members of the House of Representatives, together with six other persons other than Members of Congress, two of whom shall be resident in the City of Washington and the other four shall be inhabitants of some State, but no two of them of the same State." One of the Regents is elected chancellor by the board; in the past the selection has fallen upon the Vice President or the Chief Justice; and a suitable person is chosen by them as secretary of the Institution, who is also secretary of the Board of Regents and the executive officer directly in charge of the Institution's activities.

In regard to the personnel of the board, the following changes occurred during the year: Through his succession to the Presidency on August 2, 1923, owing to the death of President Harding, the Hon. Calvin Coolidge automatically ceased to be a Regent, thus terminating his office as chancellor of the Institution, and to fill the vacancy thus created, the Hon. William H. Taft was elected chancellor of the board on December 13, 1923. Walter H. Newton, Member of the House of Representatives from Minnesota, was appointed a Regent by the Speaker of the House to fill the vacancy caused by the election to the Senate of Frank L. Greene.

The roll of Regents at the close of the fiscal year was as follows: William H. Taft, Chief Justice of the United States, chancellor; Henry Cabot Lodge, Member of the Senate; Medill McCormick, Member of the Senate; A. Owsley Stanley, Member of the Senate; Albert Johnson, Member of the House of Representatives; R. Walton Moore, Member of the House of Representatives; Walter H. Newton, Member of the House of Representatives; George Gray, citizen of Delaware; Charles F. Choate, jr., citizen of Massachusetts; Henry White, citizen of Washington, D. C.; Robert S. Brookings, citizen of Missouri; Irwin B. Laughlin, citizen of Pennsylvania; and Frederic A. Delano, citizen of Washington, D. C.

GENERAL CONSIDERATIONS

In spite of the increasing difficulty in holding its own experienced by the Institution in late years on account of its meager resources and the increasing costs of maintenance, one of its primary functions, the "diffusion of knowledge among men," is carried out with ever-increasing scope, and its contacts with various groups of people are continually growing in number. Of its 11 distinct series of publications, chiefly technical contributions to scientific knowledge though including some more popular papers appealing to the general reader

nterested in the progress of science, there are issued every year about .00 volumes and pamphlets, of which there are sent out nearly 150,000 copies. A large proportion of this number go to libraries throughout the world, where they are readily available to the public, and many of its publications are now standard works in various branches of science. Besides this steady flow of publications, the Institution, through the public exhibits of the National Museum, the National Gallery of Art, and the National Zoological Park, imparts an incalculable amount of knowledge on natural history, anthropology, art, and history to the hundreds of thousands of visitors from all parts of the country who come to the Nation's Capital every year. In late years also the value of the arts and industries department of the Museum is becoming more and more appreciated by the public and by industrial organizations, and the exhibits portraying the scope of entire industries are being augmented at an increasing rate by the cooperation of trade associations who assemble these comprehensive exhibits from a number of manufacturers. The auditorium of the National Museum is used every year by a large number of local and national scientific and other societies for the dissemination of useful knowledge through conferences and lectures, and the scientific staffs of the Museum, the Bureau of American Ethnology, and other branches of the Institution contribute their share in the program of the diffusion of knowledge through scientific and semipopular lectures, both officially and unofficially. The archeological excavations conducted in Florida during the past winter by the Chief of the Bureau of American Ethnology were known throughout Florida as the "Smithsonian excavations" and attracted thousands of visitors, to whom Doctor Fewkes lectured several times each week on the prehistoric Indian inhabitants of the region. The latest addition to the Institution's program in the diffusion of knowledge was the inauguration during the year of a series of radio talks on scientific subjects presented in popular form, and the response to these was so widespread that the series will be continued with increased scope during the coming year. This program of dissemination of knowledge in scientific matters is carried on, as stated at the beginning, with the greatest difficulty because of the very limited endowment of the Institution, and were more means at its disposal, the Institution would be enabled to greatly expand its work along these lines, as well as in its other fundamental purpose, the increase of knowledge through scientific research and exploration.

Perhaps the most important development of the year in the Institution's affairs is the promising outlook for a building to house the growing National Gallery of Art. As noted in last year's report, Congress has provided a site in the Smithsonian Park for such

a building and funds were obtained privately for the preparation of plans. Mr. Charles A. Platt was selected as the architect and at the close of the year the plans were well under way. In addition to this, Senator Lodge during the year offered an amendment to the deficiency appropriations bill which would have provided funds for beginning the erection of a building, but the amendment was not accepted. However, these developments indicate an awakening to the realization that America should no longer be practically the only civilized nation on earth without a National Art Gallery, and it is hoped that in the near future funds will be provided for a suitable home for the valuable art collections belonging to the Nation.

FINANCES

The permanent investments of the Institution consist of the following:

Deposited in the Treasury of the United States $1,000,000.00

CONSOLIDATED FUND

Miscellaneous securities, etc., either purchased or acquired by gift; cost or value at date acquired 194,826.50
Charles D. and Mary Vaux Walcott research fund, stock (gift) value 11,520.00

The sums invested for each specific fund, or securities, etc., acquired by gift are described as follows:

Fund	United States Treasury	Consolidated fund	Walcott research fund	Total
Avery fund	$14,000.00	$29,557.52		$43,557.52
Virginia Purdy Bacon fund		50,362.34		50,362.34
Lucy H. Baird fund		1,349.58		1,349.58
Chamberlain fund		34,952.27		34,952.27
Habel fund	500.00			500.00
Hamilton fund	2,500.00	500.00		3,000.00
Caroline Henry fund		1,074.00		1,074.00
Hodgkins general fund	116,000.00	37,226.57		153,226.57
Hodgkins specific fund	100,000.00			100,000.00
Bruce Hughes fund		12,013.62		12,013.62
Morris Loeb fund		7,390.00		7,390.00
Lucy T. and George W. Poore fund	26,670.00	13,238.86		39,908.86
Addison T. Reid fund	11,000.00	4,919.00		15,919.00
Rhees fund	590.00	268.00		858.00
George H. Sanford fund	1,100.00	506.00		1,606.00
Smithson fund	727,640.00	1,468.74		729,108.74
Charles D. and Mary Vaux Walcott research fund			$11,520.00	11,520.00
Total	1,000,000.00	194,826.50	11,520.00	1,206,346.50

Dr. William L. Abbott has continued his contributions during the year for researches in natural history and collection of specimens in China.

Further generous contributions have been made by Mr. John A. Roebling for researches in astrophysics, providing for aiding the

solar observing stations in Chile and the United States, for publication of scientific papers, for purchase of instruments, and for making meteorological investigations elsewhere.

Mr. Washington A. Roebling has made a generous donation for the purchase of minerals.

The National Academy of Sciences has given the sum of $1,500 for researches in paleontology.

The Institution is also indebted to the Research Corporation for $1,250 for research work.

Freer Gallery of Art.—In compliance with the instructions of the Board of Regents, a sinking fund for the investment of surplus income from the Freer bequest has been created. The amount paid into this fund during the year was $138,688.75. The invested funds of the Freer bequest are classified as follows:

Curator's fund	$278,825.50
Court and grounds fund	278,825.50
Court and grounds, maintenance fund	69,683.75
Residuary legacy	2,676,282.75
Sinking fund	138,688.75
Total	3,442,256.25

The practice of depositing on time, in local trust companies, and banks, such revenues as may be spared temporarily has been continued during the past year, and interest on these deposits has amounted to $1,014.59. The income during the year for current expenses, consisting of interest on permanent investments and other miscellaneous sources, including cash balance at the beginning of the year, amounted to $72,558.59. Revenues and principal of funds for specific purposes, except the Freer bequest, amounted to $91,919.99. Revenues on account of Freer bequest amounted to $234,446.50. Cash recalled from time deposits $34,000; aggregating a total of $432,925.08.

The disbursements, described more fully in the annual report of the executive committee, were classed as follows: General objects of the Institution, $64,960.03; for specific purposes (except the Freer bequest), $58,501.72; temporary advances for field expenses, etc., in excess of repayments, $4,130.12; expenditures pertaining to the Charles L. Freer bequest, $291,768.05; and cash balance on hand June 30, 1924, $13,565.16.

The following appropriations were intrusted by Congress to the care of the Smithsonian Institution for the fiscal year 1924:

International exchanges	$43,000
American ethnology	44,000
International Catalogue of Scientific Literature	7,500
Astrophysical Observatory	15,500

National Museum:		
Furniture and fixtures	$20,000	
Heating and lighting	70,000	
Preservation of collections	312,500	
Building repairs	10,000	
Books	2,000	
Postage	500	
		415,000
National Gallery of Art		16,000
National Zoological Park		125,000
Increase of compensation		112,704
Printing and binding		77,400
Total		856,104

RESEARCHES AND EXPLORATIONS

Every year the Institution engages, so far as its limited means will permit, in explorations and field work, and a few of these expeditions will be mentioned here briefly to indicate the nature of the work accomplished. A number of other expeditions and researches in various fields of science are described in the appendixes on the National Museum, the Bureau of American Ethnology, the Astrophysical Observatory, and the Freer Gallery of Art. In a few cases, the entire expedition is financed and managed by the Institution, but the small amount of income remaining each year, after the administrative costs of carrying on the work of the Institution are met, is soon exhausted, and thereafter it is only possible to cooperate in various ways in expeditions financed by other scientific institutions.

GEOLOGICAL EXPLORATIONS IN THE CANADIAN ROCKIES

During the summer and early fall of 1923, your Secretary continued his geological field work in the Canadian Rockies of Alberta and British Columbia. His main objective was to secure data on the pre-Devonian strata from the Clearwater River southeast to the Bow Valley and along the eastern side of the Columbia River Valley.

It was found that the Mons formation which was discovered on the headwaters of the Saskatchewan River at Glacier Lake, extended southwesterly on the western side of the Continental Divide in British Columbia to the southern end of the Stanford Range between the Kootenay River and Columbia Lake, which is at the head of the Great Columbia River, which here flows northwesterly in what is known as the Rocky Mountain Trench. The valley of this latter river was found to be largely underlain by the limestones and shales of the Mons formation of the Ozarkian system, and the strata have been upturned, faulted, and folded prior to the great pre-Glacial

:iod of erosion that cut out the Rocky Mountain Trench. On the stern side of this valley, the Mons formation is more than 3,800 t in thickness in the Beaverfoot-Brisco-Stanford Range, and conns four well-developed fossil faunas which show it to lie between Upper Cambrian and the Ordovician systems of this and other rts of the continent. Near the head of the Sinclair Canyon there s discovered a great development of the Lower Ordovician, and several localities cliffs of massive Upper Cambrian limestones re recognized beneath the Mons formation.

This whole region is ideal for geological field work, as the numers canyons and ridges expose many of the formations from base to mmit. On the whole, the season was a successful one for its geogical results.

EXPEDITION TO DINOSAUR NATIONAL MONUMENT, UTAH

In May, 1923, Mr. C. W. Gilmore, curator of vertebrate paleonlogy, National Museum, was detailed to take charge of an expedion to the Dinosaur National Monument in northeastern Utah for e purpose of securing for exhibition in the Museum a mountable eleton of the large sauropodous dinosaur, *Diplodocus*. The fossil posit in this region was discovered in 1909 by Mr. Earl Douglass, d has been worked continuously since that time by the Carnegie useum of Pittsburgh. By 1922, the Carnegie Museum had secured fficient material for their purposes, and the Institution was notified their intention to cease operations, leaving uncovered two partially ticulated specimens of *Diplodocus*, a mountable skeleton of which s long been desired by the National Museum. Mr. Gilmore arved at the fossil quarry on May 15, and a preliminary survey showed at one of the two skeletons would form the basis of a mountable ecimen while the preserved parts of the other would serve admirably to replace the missing bones of the first. Regular work in e quarry began on May 24 and continued until August 8. Mr. ilmore employed three men with experience in this field, and was ssisted after June 5 by Mr. Norman H. Boss, of the Museum's aleontological force. Regarding the difficulties involved, Mr. Gilore says:

> The work of quarrying these often fragile bones from the ledge of rock thout doing irreparable damage is a slow and tedious operation, involving e skill of both the stone cutter and the miner. Further difficulty is encountered handling by primitive methods the immense blocks of rock inclosing the nes, with the subsequent arduous work of boxing and transportation. The rgest block quarried, containing the sacrum with attached hip bones, weighed arly 6,000 pounds when ready for shipment. The transportation of the boxes the railroad involved a haul by teams of 150 miles across country and over range of mountains 9,100 feet above sea level. However, 34 large boxes havg a combined weight of over 25 tons were safely transported.

As a result of this expedition, enough material was secured for a good skeletal mount of *Diplodocus* which, it is estimated, will exceed 80 feet in length with a height at the hips of 14 feet.

BIOLOGICAL EXPLORATIONS IN THE YANG-TZE VALLEY, CHINA

Through the continued generosity of Dr. W. L. Abbot, Mr. Charles M. Hoy sailed for China toward the close of 1922 to collect vertebrates for the Institution in the Yang-Tze Valley region. His first collecting was done in the Yochow district, where he obtained a total of 169 mammals and 84 birds. At the beginning of the fiscal year just past, Hoy left for a trip through Hunan and Kiangsi, in the course of which many interesting specimens were obtained. From Kuling, Kiangsi, a letter was received from Hoy, describing a series of misfortunes, as follows:

> The day after writing my last letter to you, from Iningchow [never received], I had a bad fall and badly wrenched my back. For about a week I was scarcely able to crawl about. Just when my back was getting so I could straighten up I had another accident and shot myself through the left leg with the Colt 45 automatic. The accident was due to a "hang fire." The gun did not go off when the hammer struck and so I lowered the gun to eject the shell when the shell exploded. The bullet struck me on the inside of the leg 4 inches above the ankle bone. * * * The wound is healing nicely, but the doctor says that it may be several months before I get full use of my foot and that I will most likely have a slight permanent limp. However, I am hoping that it won't interfere with my collecting, but even if I won't be able to do much walking myself I have one man who is a crack shot with the shotgun and another that is fair with the rifle, so I ought to be able to get specimens anyhow. My trip down from Iningchow was rather uneventful except for the above accidents. We were under military guard all the way from there to Kuikiang. The country, it seems, is full of disbanded Northern soldiers who have driven out the natives and occupied their farms. Consequently it is dangerous for even natives to travel through that region. The final explanation given me, as to the reason of the escort, was that it was feared that my guns and ammunition might fall into their hands. We were fired on once in the night, but aside from a lot of shouting and that one shot, nothing happened. We could never learn who fired the shot, but the way things turned out I am convinced that we were mistaken for bandits and the shot was fired to scare us off. Owing to the accidents, I have not been able to secure any specimens since the writing of my last letter. My outfit has not yet arrived owing to the heavy rains, but as soon as it gets here I plan to send my men out collecting so I will be able to get specimens notwithstanding the fact that I am confined to the house.

The gunshot wound was apparently healing, but while Hoy was still confined to the house he developed a severe case of appendicitis necessitating an immediate operation, from which he never recovered.

BOTANICAL EXPLORATION IN PANAMA AND CENTRAL AMERICA

Dr. William R. Maxon, associate curator of plants in the National Museum, was detailed in May, 1923, to accompany an expedition

rom the Department of Agriculture to Panama and Central merica. Unfortunately rains interfered seriously with field work 1 both Panama and Nicaragua, but in spite of this handicap, a gen-ral botanical collection of about 4,500 specimens was made, about qually divided among Panama, Nicaragua, and Costa Rica. In is report on the expedition, Doctor Maxon says:

Aside from two days given to collecting in the interesting Juan Diaz region, ist of Panama City, work in Panama was mostly confined to the Canal Zone, ing conducted chiefly from headquarters on the Pacific side, at Balboa, with ie courteous assistance of the Panama Canal authorities. Of particular in-rest were trips to Barro Colorado, a large wooded island in Gatun Lake pposite Frijoles, recently set aside as a wild reserve upon representation of ie Institute for Research in Tropical America; the virgin forest region at the eadwaters of the Rio Chinilla, above Monte Lirio; and the Fort Sherman ilitary Reservation, which includes the famous old Spanish stronghold, Fort an Lorenzo, at the mouth of the Chagres. All these localities are forested nd are rich in palms, and special attention was directed to obtaining material 1 this difficult group. With the steady clearing of leased land for planting ananas the original forest in the Canal Zone is rapidly disappearing, and with its characteristic palm associations. * * *

About three weeks were spent in Nicaragua, wholly in the region west of Lake icaragua and mainly working from Managua, the capital, which lies pic-uresquely at a new elevation 90 miles inland from the Pacific coast, flanked y numerous volcanoes. Except for the volcanoes and the low range called the ierra, given over to coffee production, western Nicaragua is low and almost ntirely cleared of forest. Cane and grazing are the main industries. The oil is largely a rich black loam of volcanic origin, and supports a luxuriant rowth of tall grasses, the arborescent vegetation being mainly confined to oadsides and abandoned "potrero." The most interesting trips were to the egion of Casa Colorado in the Sierra, and to Mombacho and Santiago vol-noes. The material collected indicates a rich flora for the higher mountain opes, one that would amply repay extended exploration.

From Corinto Doctor Maxon proceeded by steamer to Puntarenas, the Pa-fic port of Costa Rica. The ascent by rail from this port in the semiarid oastal plain to the capital, San José, lying at an altitude of 1,140 meters in ie cool *meseta central*, is through a region remarkably diverse as to physiog-raphy. From San José three principal trips were made: First, to La Palma, classical botanical locality on the cloud-drenched southwestern slopes of azú volcano; next to Santa Clara in the mountains a few leagues south of artago: then to Vara Blanca lying high up in an almost unexplored region tween the volcanoes Poás and Barba. Special attention was here given to rns and orchids, both groups being extremely abundant both as to species id individuals, and many new and interesting species in these and other oups were collected.

STUDIES ON EARLY MAN IN EUROPE

During the summer and early fall of 1923 Dr. Aleš Hrdlička, rator of physical anthropology, National Museum, revisited the portant sites of early man in western and central Europe, as well the institutions in which are preserved the skeletal remains of

ancient man and the fossil European apes. During the trip Doctor Hrdlička acted as director of the American School in France for Prehistoric Studies, and was accompanied by a number of American graduate students. One of the principal objects of the trip was to secure accurate measurements of the teeth, particularly the lower molars, of the larger fossil apes and early man by one observer, by a strictly defined method, and with accurate instruments. Another object was to take photographs of the various sites of early man of which good photographs were not available.

The trip included visits to various regions in England, Holland, Belgium, France, Germany, Bohemia, Austria, and Croatia. In these countries practically all of the important sites were visited and as far as possible the skeletal remains of early man and the fossil apes in museums along the route were examined and measured. In many cases assistance was given by prominent anthropologists connected with these institutions in giving first-hand reviews of the knowledge concerning the specimens and sites, and sometimes in personal conduct to the sites themselves. In Holland Doctor Hrdlička had the unique privilege of visiting Prof. Eugene Dubois, of Haarlem, and seeing the famous remains of the Pithecanthropus as well as the other Java remains in his possession. Regarding the Pithecanthropus remains, Doctor Hrdlička says:

> The remains of, or those attributed to, the Pithecanthropus consist of the now thoroughly cleansed skull-cap, a femur and three teeth, two molars and one premolar. Besides these there is from another locality a piece of a strange primitive lower jaw, and also two skulls with many parts of the skeletons of a later, though yet rather primitive, type of man from consolidated calcareous deposits in still another part of the island.
>
> The examination of the originals belonging to the Pithecanthropus find was in many respects a revelation. It was seen that none of the casts now in various institutions are accurate, and that the same is true of the so far published illustrations, above all those of the teeth and femur. The originals are even more important than held hitherto. The new brain cast shows an organ very close to human. The femur is without question human. When the detailed study of all these specimens is published, which Doctor Dubois expects to occur before the end of the winter, the specimens, though all controversial points may not be settled, will assume even a weightier place in science than they have had up to the present.
>
> The trip resulted in an overwhelming sense of the greatness and scientific importance of the field of early man in western and central Europe and in a keen appreciation of the opportunities for cooperation in this field by American students.

SMITHSONIAN SERIES OF RADIO TALKS

Beginning on October 19, 1923, arrangements were made with radio station WRC, of the Radio Corporation of America, to broadcast a series of talks on the Institution and its branches. These

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ide from two days given to collecting in the interesting Juan Diaz region, of Panama City, work in Panama was mostly confined to the Canal Zone, ; conducted chiefly from headquarters on the Pacific side, at Balboa, with courteous assistance of the Panama Canal authorities. Of particular in- t were trips to Barro Colorado, a large wooded island in Gatun Lake site Frijoles, recently set aside as a wild reserve upon representation of nstitute for Research in Tropical America; the virgin forest region at the waters of the Rio Chinilla, above Monte Lirio; and the Fort Sherman ary Reservation, which includes the famous old Spanish stronghold, Fort Lorenzo, at the mouth of the Chagres. All these localities are forested are rich in palms, and special attention was directed to obtaining material is difficult group. With the steady clearing of leased land for planting nas the original forest in the Canal Zone is rapidly disappearing, and with characteristic palm associations. * * *

out three weeks were spent in Nicaragua, wholly in the region west of Lake ragua and mainly working from Managua, the capital, which lies pic- squely at a new elevation 90 miles inland from the Pacific coast, flanked merous volcanoes. Except for the volcanoes and the low range called the a, given over to coffee production, western Nicaragua is low and almost ely cleared of forest. Cane and grazing are the main industries. The is largely a rich black loam of volcanic origin, and supports a luxuriant th of tall grasses, the arborescent vegetation being mainly confined to sides and abandoned "potrero." The most interesting trips were to the n of Casa Colorado in the Sierra, and to Mombacho and Santiago vol- es. The material collected indicates a rich flora for the higher mountain s, one that would amply repay extended exploration.

om Corinto Doctor Maxon proceeded by steamer to Puntarenas, the Pa- port of Costa Rica. The ascent by rail from this port in the semiarid al plain to the capital, San José, lying at an altitude of 1,140 meters in ool *meseta central*, is through a region remarkably diverse as to physiog- y. From San José three principal trips were made: First, to La Palma, ssical botanical locality on the cloud-drenched southwestern slopes of l volcano; next to Santa Clara in the mountains a few leagues south of ago; then to Vara Blanca lying high up in an almost unexplored region een the volcanoes Poás and Barba. Special attention was here given to and orchids, both groups being extremely abundant both as to species individuals, and many new and interesting species in these and other ps were collected.

STUDIES ON EARLY MAN IN EUROPE

uring the summer and early fall of 1923 Dr. Aleš Hrdlička, tor of physical anthropology, National Museum, revisited the ortant sites of early man in western and central Europe, as well he institutions in which are preserved the skeletal remains of

most important phase of the Institution's work in diffusing knowledge, and it is intended to renew the series with increased scope in the fall.

ASSISTANCE TO JAPANESE LIBRARIES DESTROYED DURING THE RECENT EARTHQUAKE

The recent disastrous earthquake in Japan destroyed large collections of books in many of the Japanese libraries, including the entire collection of 700,000 volumes in the library of the Imperial University of Tokyo. During the year an appeal was received in this country from the Japanese Association of the League of Nations for books to replenish these unfortunate libraries, especially those of universities and colleges. The Institution made up as nearly as possible complete sets of its own publications and forwarded them to a number of the Japanese libraries, the volumes and pamphlets thus sent totaling several hundred. In addition, the International Exchange Service of the Institution served as a central forwarding agency for the other American institutions desiring to contribute their publications, and during the year several large consignments containing many thousands of publications were transmitted to Japan.

COOPERATION WITH ORGANIZATIONS MEETING IN WASHINGTON

There has been during the year an unusually large number of meetings in Washington of scientific or other organizations whose work has been in some way related to that of the Smithsonian. In providing an auditorium in the Museum for these meetings, and through the assistance given in various ways by the scientific and administrative staff, the Institution has been able to render a real service in promoting scientific work and discussion. To illustrate the appreciation of this service by organizations taking advantage of these facilities, there may be mentioned three important meetings held during the year. The American Association of Museums held its nineteenth annual meeting in Washington May 10–13, most of the sessions being held at the National Museum. After the meeting the secretary of the association wrote to the Institution in part as follows:

> The success of the nineteenth annual meeting of the American Association of Museums was due in considerable part to the hospitality of the Smithsonian Institution and the friendly help of many individuals on its staff.

At the close of the first National Conference on Outdoor Recreation, held in Washington in June, the following resolutions were passed:

Whereas the success of this first National Conference on Outdoor Recreation due in large measure to the very fine services and facilities made available r the officers of the Smithsonian Institution and the National Museum, who ave been untiring in their efforts to promote the comfort and convenience the delegates to the conference: Therefore be it

Resolved, That the conference hereby expresses its sincere appreciation of ie spirit of cordial hospitality displayed by the officers and employees of these reat scientific and educational agencies and requests its executive chairman to advise Dr. Charles D. Walcott, Secretary of the Smithsonian Institution, nd his official associates.

The annual meeting of the National Academy of Sciences, which as for many years been held in the National Museum, was held this ear for the first time in the academy's new building. The following resolution passed during the sessions expresses appreciation of he services which the Institution has been able to render to the cademy in the past:

Resolved, That on the occasion of the removal of its offices from the Smithonian Institution to its new building, the National Academy of Sciences ratefully expresses its obligations to the Secretary and the Board of Regents f the Smithsonian Institution for the courtesies extended for over half a entury through the housing and care of the academy records and library, hrough its cooperation in the conduct of academy business, and through its ffective aid in promoting the objects of the academy;

And that the academy expressly acknowledges its high esteem and thanks o the Secretary of the Smithsonian Institution, Charles Doolittle Walcott, or his personal interest in the welfare of the academy, his unfailing interest n and attention to the work of the academy in the advancement of science, nd his distinguished services as treasurer, vice president, acting president, resident, and member of the council and committees, both official and unfficial, in its behalf.

PUBLICATIONS

There were issued during the year by the Institution and its ranches a total of 70 volumes and pamphlets, of which 142,385 opies were distributed, including 407 volumes and separates of the mithsonian Contributions to Knowledge, 25,937 volumes and separates of the Smithsonian Miscellaneous Collections, 19,085 volumes nd separates of the Smithsonian Annual Reports, 3,743 Smithsonian pecial publications, 78,734 volumes and separates of the various eries of the National Museum publications, 13,974 publications of ie Bureau of American Ethnology, 78 publications of the National allery of Art, 65 volumes of the Annals of the Astrophysical Observatory, 35 reports on the Harriman Alaska Expedition, and ,275 reports of the American Historical Association.

The publications of the Institution, now issued in 11 distinct eries, are its principal means of carrying out a part of its stated urpose, "the diffusion of knowledge." There is a widespread and rowing demand for its publications, not only from specialists for

the more technical series, but also from the general public, among whom the importance of scientific matters is coming to be more and more realized. This popular demand is chiefly for the Smithsonian Annual Reports, which contain a general appendix consisting of series of specially selected articles presenting in readable form progress and interesting developments in all branches of science. Unfortunately, owing to the rush of work at the Government Printing Office both during the war and since, these volumes have fallen behind date, until now they are issued over two years late. However, for the coming fiscal year, Congress has allotted an additional amount to enable the Institution to catch up with these reports by issuing two in one year, and it is hoped that within a year or two they will again appear more nearly on time.

The various publications of the National Museum and of the Bureau of American Ethnology are given in detail in the report on publications appended hereto.

In the series of Smithsonian Miscellaneous Collections 13 papers were issued during the year, among which may be mentioned two papers by your secretary on the results of his geological field work in the Canadian Rockies; an illustrated pamphlet on the History of Electric Light, by Henry Schroeder, of the General Electric Co.: a paper on the Telescoping of the Cetacean Skull, by Gerrit S. Miller, jr., of the National Museum; and a second paper by Dr. J. Walter Fewkes describing and figuring the beautiful designs on prehistoric Indian pottery from the Mimbres Valley, N. Mex.

Allotments for printing.—The congressional allotments for the printing of the Smithsonian reports and the various publications of the branches of the Institution were practically used up at the close of the year. The appropriation for the Institution and its branches for the coming year ending June 30, 1925, totals $90,000, allotted as follows:

Annual Report of the Board of Regents of the Smithsonian Institution	$22,600
National Museum	37,500
Bureau of American Ethnology	21,000
National Gallery of Art	1,000
International Exchanges	200
International Catalogue of Scientific Literature	100
National Zoological Park	300
Astrophysical Observatory	300
Annual Report of the American Historical Association	7,000

Committee on printing and publication.—The Smithsonian advisory committee on printing and publication considers all manuscripts offered for publication by the Institution and its branches and makes recommendations thereon to your secretary. It also considers matters of publication policy and means of effecting econ-

omies in the Institution's printing and binding. During the year nine meetings were held and 100 manuscripts acted upon. The membership of the committee is as follows: Dr. Leonhard Stejneger, head curator of biology, National Museum, chairman; Dr. George P. Merrill, head curator of geology, National Museum; Dr. J. Walter Fewkes, chief, Bureau of American Ethnology; Mr. N. Hollister, superintendent, National Zoological Park; and Mr. W. P. True, editor of the Smithsonian Institution, secretary. Toward the close of the year there were added to the membership of the committee Dr. Marcus Benjamin, editor of the National Museum, and Mr. Stanley Searles, editor of the Bureau of American Ethnology.

LIBRARY

The service of the libraries administered under the Smithsonian Institution has been continued, although with increasing difficulty owing to the need for more assistants. Mr. Paul Brockett resigned as assistant librarian, after 37 years with the Smithsonian Institution, in order to assume charge of the new building of the National Academy of Sciences as assistant secretary and librarian.

The additions to the libraries reached a total of 12,249, as compared with 10,938 the past year. The number of loans was 13,326, as compared with 12,076 the past year, exclusive of books lent from the Smithsonian deposit at the Library of Congress. Efforts to secure missing parts for including in incomplete sets resulted in the receipt of 1,786. Owing to the lack of sufficient clerical help, it has not been possible to have typed for the general library catalogue the catalogue cards of special collections that have been prepared during the year. Consequently the number of volumes catalogued for the general catalogue dropped from 6,341 to 5,348.

Probably the most important addition of the year was the Edgar E. Teller collection presented by Mrs. Teller to the library of the United States National Museum. The catalogue of the European Historical Series of the Watts de Peyster collection is approaching completion.

NATIONAL MUSEUM

Since 1916 the collections in the care of the Museum have been increased by two and one-fourth million specimens, and its exhibition space has been enlarged by the addition of the Aircraft Building. Unfortunately, however, the appropriations have not kept pace with this rapid development, and it is now only with the greatest care and economy that the actual work of the safe-keeping of the collections and their classification and exhibition is carried on. There is practically nothing left to care for the normal expansion

of the Museum's work and for increasing its usefulness to the people of the country. The Museum, with its vast collections, serves the public not as it would and could but as its limited financial resources permit. One forward step has been made, however, in the reclassification of salaries which becomes effective on July 1, 1924, and as a whole the scientific force of the Museum is at last to receive adequate compensation.

The outstanding feature of the year was the gift to the Nation for exhibition in the National Museum of a complete American colonial room, presented by Mrs. Gertrude D. Ritter, of Washington, D. C. This notable gift includes wall paneling from the old Bliss homestead at Springfield, Mass., and a remarkable collection of furniture, china, glassware, pewter, pictures, and textiles belonging to the same period of early American history. The room is set up and arranged in one of the Museum rooms exactly as it would have appeared in a colonial home of the period of about 1750.

A program of intensive work on the development of the Loeb collection of chemical types was made possible this year through the accrued interest on the Loeb fund. A curator of the collection was appointed and the advisory committee reorganized, and it is expected that in a year or two the value of such a type series of chemicals will be amply shown.

The Museum received during the year 362,942 specimens, a notable increase over last year in numbers and also in scientific value. Over 8,000 duplicate specimens classified and labeled were distributed for educational purposes to schools and colleges. A somewhat detailed account of the accessions in the various departments of the Museum is given in the report of the administrative assistant in charge, and only a few of the more notable acquisitions will be mentioned here. In anthropology a noteworthy collection of ethnological material from the Philippines, made by the late Capt. E. Y. Miller, was presented by Mrs. Florence G. Miller, and a number of specimens representing several Indian tribes of South America was the gift of Dr. D. S. Bullock. A valuable series of unique ancient earthenware bowls from the Mimbres Valley, N. Mex., was presented by the Bureau of American Ethnology. A series of prehistoric antiquities from ancient sites in France, Belgium, and Germany was added by Dr. Aleš Hrdlička as the result of his recent trip to Europe.

The collections received in biology greatly surpass those of recent years both numerically and in scientific importance, the latter point being emphasized by the addition of a large number of species and genera new to the Museum, many gaps in the collections having been filled. The outstanding accession of the year is the gift by Dr.

J. M. Aldrich, associate curator of insects, of his collection of 45,000 specimens of dipterous flies, the result of his life's collecting and study. Considerable collections were received from Rev. D. C. Graham, made during his explorations in the Province of Szechwan, China. Dr. W. L. Abbott secured a large number of plants, reptiles, and amphibians during an expedition to Santo Domingo. The National Herbarium was greatly enriched by three expeditions to tropical America, that of Dr. A. S. Hitchcock to Panama, Ecuador, Peru, and Bolivia; of Paul C. Standley to the Canal Zone and Costa Rica; and of Dr. William R. Maxon to Panama, Costa Rica, and Nicaragua. The research work of the staff of the department of biology has been continued whenever time could be spared from the necessary work of caring for the increasing collections, but the divisions are greatly undermanned and much more scientific work would be accomplished if more assistants were available.

The department of geology received a large amount of material of unusual value for both exhibition and study purposes, the most noteworthy accessions being the large sauropodous dinosaur from the Dinosaur National Monument, Utah, and the Edgar E. Teller and George M. Austin collections of fossils, which together comprise at least 125,000 specimens. The economic collections have been increased by the addition of a number of ores and by a series of diamond-bearing rocks from Arkansas. Meteoric irons from New Mexico, Kansas, Chile, Spain, and Australia added new material to the meteorite collection. The mineral collections received a number of specimens chiefly through the generosity of Col. Washington A. Roebling, and several cut gems were added to the Isaac Lea collection. Expansion of the study series and research work occupied much of the time of the curators and their assistants.

The divisions of mineral and mechanical technology received many interesting additions, including two automobiles presented by the Cadillac Motor Co., one made in 1903 and the other in 1923, the latter being cut away in cross section to show the working parts. Another valuable accession was a complete working unit of a Strowger automatic telephone system equipped with three telephones which can be operated by the visitor, thus enabling him to observe the functioning of the apparatus. The division of textiles, including also wood technology, organic chemistry, foods, and medicine, received over 3,300 specimens during the year, including large series of industrial specimens illustrating every branch of rubber manufacture, the manufacture of leather and shoes, and the preparation and dyeing of seal, muskrat, and rabbit skins. There were also accessioned many chemical materials used in various industries, a number of interesting textiles, and material of value to be added

to the exhibitions in the division of medicine. The division of graphic arts received numerous additions pertaining to the history and development of the printing art and held a number of successful exhibitions of prints, etchings, lithographs, and photographs. In the division of history the most notable addition was the American colonial room presented by Mrs. Gertrude D. Ritter, mentioned previously in this summary. The division also received a gown worn by Mrs. Warren G. Harding and another worn by Mrs. Benjamin Harrison to be added to the collection of costumes of ladies of the White House in which so much popular interest is shown.

The Museum participated in a number of field expeditions which have resulted in greatly increasing the collections in the various departments. These are described in the report on the Museum appended hereto. The auditorium was used by a large number of scientific and other societies and organizations for lectures and meetings. Visitors to the Natural History Building during the year totaled 540,776; to the Arts and Industries Building, 290,012; to the Aircraft Building, 43,534; and to the Museum exhibits in the Smithsonian Building, 104,601. Eight volumes and 44 separates were published by the Museum during the year, and of these 78,734 copies were distributed.

NATIONAL GALLERY OF ART

The year has witnessed substantial advance in the work of the gallery, and a number of important art works were received notwithstanding the fact that there is no longer suitable space available for the display of additional exhibits. Constant effort has been made during the year to impress upon the country the urgent need of a National Gallery Building, and gratifying assurance of the awakening of public interest in national art is given by the introduction in the Senate by Senator Lodge of an amendment to the deficiency appropriations bill to provide for commencing the erection of a suitable building for the gallery. Although this amendment did not pass at the last session of Congress, it is hoped that favorable action will soon be taken. It will be recalled from last year's report that Congress has provided a site in the Smithsonian grounds for such a building and that funds were raised privately for the preparation of plans. At the close of the year Mr. Charles A. Platt, the architect selected, had the plans well under way.

The annual meeting of the National Gallery Commission was held on December 11 and a number of important topics were considered, including the problem of securing a National Gallery Building, a recommendation that a division of historical architecture be included in the National Gallery of Art, and the selection of an architect for

the proposed building. Mr. Gari Melchers was selected to succeed Mr. Daniel C. French, who had resigned as chairman of the commission.

Permanent accessions to the gallery for the year were limited to about 10 paintings, but Mrs. Ralph Cross Johnson deposited a collection of 11 early Christian paintings by Italian, Dutch, Flemish, and Spanish masters, and has indicated her intention of making the "deposit" a permanent addition to the gallery. A number of loans were accepted during the year, and the gallery in turn loaned a number of paintings to accredited art institutions. Three special exhibitions were held in the gallery during the year, and the World War portrait collection was installed in an improvised gallery on the second floor of the Natural History Building of the National Museum, which proved to be quite satisfactory for their exhibition.

FREER GALLERY OF ART

Work completed during the year includes the examination, classification, and cataloguing of Chinese and Japanese stone sculptures and paintings, and much additional work has been accomplished in the preservation, framing, lettering, and mounting of paintings, etchings, and lithographs. Identification photographs have been made of many objects in the collection to provide ready reference and to save handling of the collections. A special exhibition of Whistler etchings, dry points, and lithographs was held in four of the galleries during January and February. Fourteen hundred gallery books describing the objects on exhibition have been prepared, and there have also been issued a Synopsis of History for the use of students and a third printing of the pamphlet giving general information about the gallery and collections.

Additions to the collections by purchase included Chinese bronzes, Indian paintings, Persian paintings, and Chinese sculptures, and the library was increased by the addition of a number of books and pamphlets in various Asiatic and European languages. Several cases, picture frames, and other necessary articles of equipment were constructed in the gallery workshop.

The total attendance for the year was 111,942, including 482 visitors who came to work in the study rooms or to examine objects not on exhibition. The auditorium of the gallery was used in February by the Library of Congress for the presentation of three recitals of chamber music, and in April, Prof. Paul Pelliot, of the Collège de France, gave an illustrated lecture on "Chinese bronzes, jades, and sculptures."

The archeological expedition to China under the joint auspices of the gallery and the Museum of Fine Arts, Boston, has carried on

fruitful investigations in various localities in China, latterly at Yü-ho Chên, in Honan, where some burials of the Han dynasty have been thoroughly investigated with gratifying results. Even more important is the cooperative agreement with regard to archeological investigation established between the gallery and the Chinese authorities, which was confirmed by the unsolicited appointment of Mr. Bishop as Honorary Adviser in Archeology to the Historical Department of the Chinese Government. This is the first definite effort of the kind to bring Chinese archeologists and officials together in a beneficial relationship with western archeologists and museums, which it is hoped will provide a basis for more enlightened scholarship and gradually supplant the ruthless and unscientific collecting of Chinese antiquities on a commercial scale as hitherto allowed.

BUREAU OF AMERICAN ETHNOLOGY

The aim of the Bureau of American Ethnology is to discover and disseminate correct ideas of the Indian as a race, that our people may better understand and appreciate his history, language, sociology, music, religion, and various arts and industries. The sources of this information are from year to year becoming fewer and fewer as the customs indigenous to America are lost in the settlement of the former homes of the Indians by the white race. It is therefore imperative that intensive work be carried on by the staff of the bureau to record accurately as much as possible of this material from the Indians themselves before it is too late.

The greatly increased number of visitors to the national parks and Indian reservations of the Western States, due to the present popularity of automobile touring, has led to a desire on the part of the general public for more information on the history and customs of the Indians, and urgent calls from universities and other institutions for advice and assistance in local problems relating to the Indians have been more numerous than ever before. The bureau's most effective means of supplying this information and answering these calls is its unique series of publications on every phase of Indian life and culture. With the greatly increased cost of printing and the very limited funds for the purpose placed at the disposal of the bureau, there has resulted a very unfortunate congestion of manuscripts awaiting publication. It is usually two or three years after a report is handed in by a member of the staff before it can even be sent to the printer, which not only results in difficulty in supplying the requests of the public but is very discouraging to the scientific staff who are carrying on this work.

A large proportion of the time of the chief of the bureau is devoted to administrative work, but opportunity was found to carry on

an archeological expedition to southwestern Florida, where but little work of this character has previously been done. With the aid of Mr. E. M. Elliott and his associates, of St. Petersburg, Doctor Fewkes began the excavation of certain large shell mounds on Weeden Island near St. Petersburg. One of the largest mounds proved to be a cemetery, and from November until March about one-half of it was excavated. A large collection of aboriginal objects and skeletons was made, which gives evidence of two distinct cultures, one above the other. The lower contained crude pottery and a few implements mostly of shell bearing considerable likeness to the so-called Archaic Antillean culture of Cuba. The upper layer gave very fine specimens of decorated pottery and other objects which show close relationship to the Indian culture of Georgia, indicating a southward extension of population possibly allied to the Muskhogean into the Florida Peninsula. This field work of the bureau in Florida inaugurates a plan of cooperation of members of the staff and others to determine the boundaries and extension of the great Muskhogean culture of the Gulf States, the object being to obtain information on the relationship of the mounds of our southern States to those of the Huastecs on the Gulf coast of Mexico.

Dr. John R. Swanton completed the translation of stories from his Koasati, Alabama, Hitchiti, and Creek texts; edited a manuscript on Indian trails by the late W. E. Myer; and began the preparation of a card index of all words in the Timucua language in the religious works of the Franciscan missionaries Pareja and Movilla, nearly all that is left to us of this old Florida tongue. Dr. Truman Michelson carried on ethnological studies among the Indians of Labrador. From his work it appears that the language of the Nascopi and Davis Inlet Indians is the same, and merely a Montagnais dialect rather than a distinct language. It may be noted that the folklore of the Indians of Labrador contains more elements occurring among Central Algonquians than has been suspected. At the close of this work, he continued his researches of former years among the Fox Indians at Tama, Iowa, devoting especial attention to the ceremonial runners of these Indians.

Mr. J. P. Harrington took charge of the exploration of the Burton Mound at Santa Barbara, Calif., under a joint arrangement with the Museum of the American Indian, Heye Foundation. Many facts of interest for the prehistory of the Santa Barbara Indians and the early culture of the Pacific coast in general were recorded, and a great number of skeletons, utensils, weapons, and trinkets were secured. Mr. J. N. B. Hewitt was engaged during the greater part of the year in working up the material gathered in former years relating to the League or Confederation of the Five Iroquois Tribes or Nations. In

June he visited the Six Nations of Iroquois near Brantford, Ontario, Canada, and the Onondaga, Tonowanda, and Tuscarora in New York State for the purpose of securing certain data regarding the Condolence and Installation Council.

Mr. Francis La Flesche devoted his time to the assembly of his notes on the child-naming rites and ceremonies of the Osage Indians. Mr. La Flesche has succeeded in securing two of the remaining versions of these rites which are now practically obsolete, and these will form the two parts of a publication on the subject, now nearing completion. Mr. W. E. Myer on his return from field work in Tennessee began preparation of a report on the remains of the great prehistoric Indian settlement known as Great Mound Group in Cheatham County, Tenn. The great central mound of this ancient town was protected by earthen breastworks surmounted at intervals by circular wooden towers, and completed by earthen bastions projecting 150 yards beyond the main walls. In addition to this fortified mound, there were four other eminences with tops leveled into plazas, which showed evidences of earth lodges and former buildings.

Miss Frances Densmore recorded songs of the Makah Indians at Neah Bay, Wash., in order to compare the music of Indians living beside the ocean with that of tribes living on the mountains, plains, and desert. It was found, as a general observation, that the music of the Makah resembles that of the Ute, Papago, and Yuma more than that of the Chippewa, Sioux, and Pawnee. The Makah songs recorded included songs of the whale legends and whaling expeditions, songs of the potlatch and various social dances, songs connected with contests of physical strength, "gratitude songs," lullabies, courting songs, and songs of wedding festivities.

The publications of the bureau issued during the year consisted of three bulletins, and a number of other bulletins and reports were in press at the close of the year. There were distributed during the year 13,974 copies of the publications of the bureau.

INTERNATIONAL EXCHANGES

The total number of packages handled by the exchange service during the year was 460,658, weighing 567,107 pounds, an increase over last year of 82,832 packages and 74,291 pounds in weight. This increase was due for the most part to the large number of publications received in this country for transmission to universities and colleges in Japan that lost their libraries during the recent earthquake.

The Institution was notified during the year that the Government of Hungary had established the Hungarian Libraries Board at Budapest to act as the Hungarian exchange agency, and that the

Governments of the Dominican Republic, Latvia, and the Free City of Danzig had adhered to the two exchange conventions concluded at Brussels, March 15, 1886.

The number of full and partial sets of United States official documents sent through the exchange service to depositories abroad is now 97, there having been added during the year to receive full sets the Ministry of Finance, Government of Northern Ireland, Belfast; State Library, Reval, Esthonia; and the Library of the League of Nations, Geneva, Switzerland. In addition, there is an immediate exchange of the official journal between the United States and 41 foreign governments. During the year, this immediate exchange of the official journal has been entered into with Haiti, Latvia, and Norway.

NATIONAL ZOOLOGICAL PARK

The year has been one of the most successful in the history of the park, both as to care and maintenance of the animal collections, buildings, and grounds, and in service to the public. All previous attendance records were broken by the total of 2,442,880 visitors recorded for the year. Among the 221 animals presented to the park during the year were many rare and unusual species, including a fine young Baird's tapir presented by Mr. M. G. Henery, of Honduras. This species of tapir has always been one of the rarest animals in zoological collections. Through the continued interest in the park of Mr. Victor J. Evans, of Washington, D. C., 55 animals were added to the collections including several very rare and valuable species. A most interesting collection from Brazil was brought to the park by Dr. W. L. Schurz, commercial attaché, United States Embassy, Rio de Janeiro, which included a fine South American bush dog, the first of its kind to be shown in the park.

There were 1,645 animals in the collection on June 30, 1924, including 458 mammals of 177 species, 1,059 birds of 276 species, and 128 reptiles of 41 species. The number of animals added during the year was 491, while 614 were lost through exchange, death, and return of animals on deposit. Forty-two mammals were born and 27 birds hatched in the park during the year, while the death rate was held at a normally low mark.

The 11 new yards for hoofed animals mentioned last year were completed during the year and occupied by animals in the fall. The superior arrangement of these paddocks for the care and exhibition of the animals has been favorably commented on by officials of other zoological gardens and by visitors. A new restaurant building, needed for many years, was completed during the year, which adds greatly to the appearance of the park and is much appreciated by

visitors. The most urgent present needs of the Park are a new exhibition building for birds, the present one being in very bad condition and much too small for the large crowds which visit it, and a fund for the purchase of rare and unusual animals. This fund might be increased by gift or bequest and by depositing in it certain miscellaneous revenues of the park which are now turned into the general fund of the Treasury, if this were authorized by an act of Congress.

ASTROPHYSICAL OBSERVATORY

During the year arrangements were made, through the generosity of Mr. John A. Roebling, to have sent to the Institution daily telegraphic reports of the solar constant value from the two solar radiation stations at Montezuma, Chile, and Mount Harqua Hala, Ariz. Experimental temperature forecasts for New York City, based on these daily reports of solar changes, have been regularly submitted by Mr. H. H. Clayton for certain periods of time, namely, for 3, 4, 5, and 27 days in advance and also general forecasts as to the expected departure from mean normal temperatures for the coming months and weeks. These forecasts show undoubted prevision of the temperature even up to 5 days after the solar observations. The 27-day detailed forecasts have hitherto shown no correlation with New York City temperature, but the broader forecasts for coming weeks and months have been fairly verified. The results are promising enough to warrant further trial, and through Mr. Roebling's generous support these experimental forecasts will be continued until June 30, 1925.

Three projects were undertaken at the Mount Wilson station, which the director occupied from July to October, 1923: First, to begin observations on the variations of atmospheric ozone; second, to test new improvements on the solar cooker; and, third, to measure the spectra of the brighter stars, using the 100-inch telescope and special apparatus prepared for the work. In the first project apparatus was made ready, but circumstances prevented the actual beginning of the determinations of atmospheric ozone: in the second, experiments with the solar cooker resulted in some advancement and pointed the way to further progress; and in the third highly interesting results on stellar spectrum distribution and on star diameters were obtained.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

The condition of the International Catalogue of Scientific Literature remains practically the same as it was last year. It will be

:alled that publication of the catalogue was suspended in 1921, 'ing to the fact that such abnormal conditions in international change and publishing costs had been brought about by the war at many of the cooperating nations were unable to pay the consequent increased prices of their subscriptions. However, the need of is classified index to the ever-increasing literature of science is eater now than ever before, for no publication or combination of blications has even attempted to fill its place, and it is to be gretted that so much effort is being independently expended to eet special requirements when it is evident that, should these parate undertakings be either merged or at least brought into operation all would be benefited and the long-felt needs of specialis and librarians thus be fully met.

The International Catalogue is in a position, through its officially cognized bureaus, to prepare index data to all of the scientific iblications of the world, this being a feature which no new organition can even hope to duplicate. The local bureaus, being officially cognized and in a position of close contact with both publishers and thors of scientific papers, have unique facilities for providing the ta necessary for abstracts and special indexes, and as such data needed by all agencies supplying notices of scientific publications whatever form, it is felt that this organization should be the undation on which to build a cooperative service to meet the needs all interested in scientific activities.

NECROLOGY

JOHN L. BAER

Mr. John L. Baer, employed by the National Museum for several ars past as temporary assistant in the department of anthropology, ed in Panama on May 28, 1924. Mr. Baer was sent to represent e Smithsonian Institution on the Marsh Darien Expedition and his ath occurred in Panama just before the return of this expedition.

J. J. DOLAN

Mr. J. J. Dolan, employed by the National Museum in various pacities for 32 years, died on November 22, 1923. Mr. Dolan tered the service of the Museum as watchman and passed through e various grades until he reached the position of captain of the tch in 1903. This position he held until April 15, 1923, when he is transferred to the office of shipper, which position he held at the ne of his death.

ELIZABETH D. TABLER

Miss Elizabeth D. Tabler, who had served in various offices in the National Museum for nearly 41 years, died on July 19, 1923. Miss Tabler came to the Museum in October, 1882, and served in the office of Mr. S. C. Brown, registrar, until his death in 1919, when she was transferred to the division of correspondence and documents, where she was employed at the time of her death.

Respectfully submitted.

CHARLES D. WALCOTT, *Secretary.*

APPENDIX 1

PORT ON THE UNITED STATES NATIONAL MUSEUM

R: I have the honor to submit the following report on the con-
n and operation of the United States National Museum for the
l year ending June 30, 1924.

he maintenance of the National Museum for the year was pro-
d for by a Government appropriation of $452,500 in the execu-
and independent offices act approved February 13, 1923, with an
d item of $79,896 for increase of compensation to care for the
s of the employees. In 1916 the appropriation to the Museum
ll purposes was $426,000. Since 1916 the Museum has increased
xhibition space by the acquisition of the Aircraft Building; has
rially enlarged the scope of its collections in arts and indus-
and in history, and has received over two and one-fourth mil-
additional specimens, besides assuming certain definite responsi-
ies for the guarding and upkeep of the Freer Building. As can
adily seen, the difference in the appropriations of 1916 and 1924
ly covers the added cost of maintaining the buildings and
ding the collections, leaving little or nothing to provide expert
tance needed in carrying out the fundamental requirement of
classification of the added collections. The growth of the
eum in all directions continues to be increasingly conditioned by
mited finances. Economies of all kinds are resorted to in mak-
he appropriation provide first for the safe-keeping of the collec-
and then for their classification and exhibition. The Museum
its vast collections serves the public not as it would and could
s its limited financial resources permit.

ring the year the scientific staff of the Museum was held intact
very few exceptions, doubtless due to the approaching read-
nent under the classification act of 1923, which becomes effective
1, 1924. As reported last year, tentative allocations of all posi-
in the Government bureaus under the Smithsonian Institution
submitted to the Personnel Classification Board by the writer
aison officer of the Institution. The board this year reviewed,
ed, and approved, with few exceptions, the allocations of the
eum employees. The few positions still awaiting the board's
approval will, it is expected, be settled within a few days. The
lts of the classification act are far-reaching. The scientific force

of the Museum is at last to receive adequate compensation, as a whole. There is, however, still one lot of scientific workers whose gradings must be revised to put them on an equality with similar employees elsewhere, but this will doubtless soon be satisfactorily adjusted.

The outstanding feature of this year was the addition to the Museum exhibition halls of an American colonial room, the gift of Mrs. Gertrude D. Ritter, as mentioned elsewhere in the report. This is the first period room to be permanently installed in the Museum. One of the foyer rooms in the Natural History Building has been entirely transformed and now preserves the home atmosphere of the early settlers of our country.

The time has come, with the continual stream of additions to the collections, when new objects can usually be displayed only by withdrawing from exhibition other objects, often of equal interest. The installation of the colonial room necessitated the condensation of the District of Columbia faunal exhibit.

The Museum was able by curtailing its archeological exhibition to materially assist the National Gallery of Art. The pressing needs of the gallery for additional hanging space led to the construction of a gallery 40 feet square in the west end of the east north range, second floor of the National History Building, to accommodate the nucleus of the National Portrait Gallery. This collection consists of the series of paintings especially made by American artists of persons prominently associated in the Versailles peace treaty—the group picture of the various delegates around the council table, and 22 individual portraits of the distinguished leaders of America and the allied nations. Designed especially for this collection, the gallery admirably fills its purpose.

A program of greater development for the Loeb collection of chemical types was made possible this year through the accrued interest on the Loeb fund, and includes the employment of a chemist to devote his entire time to its furtherance. The advisory committee on this collection was reorganized about the middle of the year to provide representation of the varied governmental agencies in Washington interested in chemistry. The committee is now constituted as follows:

Dr. J. E. Zanetti, chairman of the division of chemistry and chemical technology, National Research Council, ex officio; Dr. C. A. Browne, Chief of the Bureau of Chemistry, United States Department of Agriculture, ex officio; Dr. S. C. Lind, chief chemist of the Bureau of Mines, United States Department of the Interior, ex officio; Dr. W. F. Hillebrand, Chief of the Division of Chemistry, Bureau of Standards, United States Department of Commerce, ex officio; James K. Senior, representative of the committee in the

liddle West; Dr. C. L. Alsberg, representative of the committee on he Pacific coast; and F. L. Lewton, representative from the United tates National Museum.

On the recommendation of the committee, O. E. Roberts, jr., was ppointed curator of the Loeb collection of chemical types on April , 1924. Twenty-seven specimens were added to the collection during he year and several hundred are being prepared for presentation. t is expected that the intensive work of the next year or two will lemonstrate the value of a type series of this kind.

The collections of the National Museum in the field of the arts and ndustries are more and more becoming recognized as a vast refer- nce book of authentic information. Various governmental agencies ely upon the Museum's specimens for the identification and com- parison of new material. Manufacturers are beginning to realize that the deposition of their products in the collections of the Museum acts as an additional protection against suits for infringement, and those who may have been accidentally granted a patent on an art that is not new. Several examples of the value of this protection have recently been brought to the attention of the Museum by patent examiners and attorneys for patentees. In one case a suit for in- fringement involving large damages was settled out of court upon the evidence of a Museum specimen. In two other cases the denial by the Patent Office of a patent on a product constructed upon what were claimed to be entirely new principles was found warranted after examinations of specimens in the National Museum. The old adage, "There is nothing new under the sun," is often shown to be true when an examination is made of the Museum's collections. That feature of the American patent system which denies a patent to an art or invention that has been shown to the public for two years or more increases the importance of a great collection illustrating industrial processes and products and makes it an important refer- ence book to the United States Patent Office as well as to manu- facturers, inventors, and the investing public. With the continued cooperation of American industries these collections will grow in importance and scope, enabling the National Museum to render more efficient service along these lines.

The Museum served also in the diffusion of knowledge by assist- ing the parent institution in its broadcasting program under Austin H. Clark, of the Museum staff, in whose charge the subject was placed by the secretary. Arrangements were made for broadcast- ing from Station WRC, Radio Corporation of America, a talk on the Smithsonian proper, historical in nature, and a series of sup- plementary talks on the various major divisions. Seven 15-minute alks were accordingly given by staff members, the first on October 9 and the last on November 16, 1923.

The conclusion was reached in the spring, as a result of careful study of radio programs, that the Institution and Station WRC could to their mutual advantage give a series of informative talks on special scientific topics. This led to the establishment of a regular Smithsonian period every Wednesday at 6.15 p. m. The Carnegie Institution of Washington and the various scientific bureaus of the Government whose work is more or less complementary to that of the Smithsonian cooperated in making possible so ambitious a project. The series was inaugurated on April 9 by a talk by Mr. Clark on "The giants in the animal world." This was followed by 10 others, equally instructive, the last on "Atmospheric electricity," by Dr. S. J. Mauchly, of the Carnegie Institution, given in cooperation with the Smithsonian on June 18, 1924. Altogether 18 items were broadcast by the Smithsonian Institution during the year, 18 different individuals participating, of whom 7 appeared under the auspices of or in cooperation with the Smithsonian and the remaining 11 as members of the staff, 7 being from the Museum. Those who participated in this program are few in number, however, as compared with those who contributed toward making it a success by furnishing information, suggestions, and encouragement. The series will, it is expected, be resumed in the early autumn.

Lack of space makes it necessary at times to refuse objects tendered for the collections, often where the Museum would like to encourage the intended donor to bring to the Museum not only his treasures but his problems also, for the Museum renders service in many ways. By its exhibition collections it conveys a message to those citizens from all parts of the land who visit their Capital; by its reserve series it affords assistance to workers in all lines here represented; by its system of distribution of duplicate specimens for educational purposes it aids the coming generation all over the land; by its correspondence it conveys desired information in response to specific inquiries in many lines; by its publications it extends the boundaries of learning; and now, by the radio its service in diffusing knowledge has been extended immeasurably.

COLLECTIONS

The total numbers of specimens received by the Museum during the year was 362,942, exceeding numerically the receipts of the previous year by over 70 per cent. Not only in numbers is this year's increase notable, but in scientific value as well. The increment is particularly rich in type specimens and in other specially desired material, filling gaps and otherwise strengthening the collections in many lines. Additional material to the extent of 1,187

chiefly geological, was received for special examination and
ort.

he distribution of duplicates for educational purposes, mainly
igher schools and colleges, aggregated 8,528 specimens, duly
sified and labeled. Nearly 20,000 specimens and over 90 pounds
ulk material for blowpipe analyses were sent out, in exchange
which the Museum has received or will later receive desired
erial in many lines. Nearly 17,000 specimens and some 24
ads of bulk material were lent to specialists elsewhere for ex-
nation and study.

résumé of the principal acquisitions of the year follows.

nthropology.—The department of anthropology reports a favor-
year, marked by substantial increases in its collections.

ı ethnology noteworthy accessions were received from the Philip-
s, collected by the late Capt. E. Y. Miller, consisting of rattan
thongs, bamboo strike-a-lights, decorated gongs, and other ar-
s, presented by Mrs. Florence G. Miller; and a considerable
ber of specimens from the Araucanian, Aymara, Lengua, and
macoco Indians of South America, gift of D. S. Bullock.

ı American archeology is noted an especially valuable collection
5 unique ancient earthenware bowls with figures of men and
nals and of group compositions from Mimbres Valley, N. Mex.,
ived from the Bureau of American Ethnology. The possibili-
of these vessels in the application of decorative art by schools
manufacturers are great. The collection is also indebted to
or J. Evans for the loan of 88 pieces of excellent Casas Grandes
ent pottery. In Old World archeology there was added a
s of prehistoric antiquities from ancient sites in France, Bel-
n, and Germany, collected by Dr. Aleš Hrdlička during his
nt trip to Europe. In physical anthropology the most notable
ipt was a large number of skeletal remains from early historic
ara Indian village sites near Mobridge, S. Dak., collected by
W. Stirling. The collection of musical instruments received
ortant additions given by Hugo Worch.

he work of the department in installing, rearranging, and pre-
ing specimens was actively carried out. Miss Frances Densmore
ared a handbook on the collection of musical instruments and
d in rearranging the exhibit. Among the numerous contacts
he department with individuals seeking information the talks
n to classes and groups are most valuable and interesting. Many
talks were given by members of the staff.

iology.—The collections received by the department of biology
ng the year greatly surpass those of the years immediately
eding, not only numerically but equally so in scientific im-

portance. The latter point is emphasized by the addition of a large number of species and genera new to the Museum, many gaps having been filled and deficiencies supplied. This is particularly noticeable in the division of birds, where the generosity of Bradshaw H. Swales has made possible the acquisition of many forms hitherto unrepresented in its collections.

The most outstanding accession of the year is the donation by Dr. J. M. Aldrich, associate curator of insects, of his private collection of nearly 45,000 specimens of dipterous flies, representing 4,145 named species and many unnamed, with type material in 534 species, the fruit of a busy life of collecting and study of these insects by one of the leading specialists in this important order.

The activities so auspiciously begun in China, as noted in my previous report, were continued with gratifying results during the present year. I have to record with extreme regret the tragic death of Charles M. Hoy on September 6, 1923, at Kuling, China. It will be recollected that he was sent to China by Dr. W. L. Abbott for the purpose of making collections for the National Museum, and it was during the first trip that the Museum suffered the loss of this intrepid field naturalist. Rev. D. C. Graham continued his explorations in the western part of the Province of Szechwan. During the summer of 1923 he made an expedition to Mount Omei and Tatsienlu. The collections received contained a large number of topotypes of species previously described, in addition to many new ones, some of them from very high altitudes near the Tibetan border. The National Geographic Society's expedition under F. R. Wulsin during 1923 reached the famous Tibetan Lake Kokonor, but the collections, which are of considerable magnitude, have not been received as yet. Dr. W. L. Abbott during his expedition to the island of Santo Domingo during the early winter, though paying attention chiefly to the Samana region, secured a large number of plants, reptiles, and amphibians, but the great prize was a series of skins, skeletons, and embryos representing a genus of rodents which has not been found alive for nearly 100 years. Dr. Hugh M. Smith's activities in Siam, Dr. Casey A. Wood's visit to the Fiji Islands, Dr. T. D. A. Cockerell's expedition to eastern Siberia, and Secretary Charles D. Walcott's Canadian expedition also added materially to our collections. Dr. Paul Bartsch and Gerrit S. Miller, jr., brought back extensive collections from the Bahamas and the Lesser Antilles, respectively. The National Herbarium was greatly enriched by three major expeditions to tropical America, namely, Dr. A. S. Hitchcock's to Panama, Ecuador, Peru, and Bolivia; Paul C. Standley's to the Canal Zone and Costa Rica; and Dr. William R. Maxon's to Panama, Costa Rica, and Nicaragua.

The principal work of the taxidermists during the year has been the dismantling of one of the largest and oldest of the biological groups in the North American mammal hall, namely, that of the Rocky Mountain goats. The mounting of the animals for the new group, which have been collected for a number of seasons by Doctor and Mrs. Walcott during their explorations in the Canadian Rockies, has been practically finished and a fair beginning made on the rock work and other accessories. The arrangement, cataloguing, and installation of the large material received from collectors in the field has cost much time and labor, but good progress has been made and the condition of the study collections is considered very good.

As usual the Museum is under great obligations to a great number of scientific men connected with universities, museums, and other institutions all over the country and abroad, for working up such parts of the collections as are not represented by specialists on the staff of the National Museum. The research work of the members of the scientific staff has continued during such time as could be spared from the routine work, and some important memoirs have been concluded and published during the year, but the divisions are greatly undermanned, and more scientific work of a high order could be accomplished were more assistants available. With the increase in the number of accessions, the opportunity for research work becomes less.

Naturalists visiting Washington for the purpose of examining the collections have been given the widest and most liberal assistance in pursuing their studies, and loans of specimens to scientific institutions and individual investigators in this country and abroad have been made freely as heretofore. Zoological and botanical duplicates distributed to high schools, colleges, institutions, etc., aggregated 4,194 specimens, of which 2,086 consisted of mollusks in 14 prepared sets, and 800 fishes in 9 sets. Exchanges to the number of 14,526 were sent out, of which 2,737 were zoological.

The total number of specimens of animals and plants now in the collections is estimated at 7,206,816, of which 1,183,700 are plants.

Geology.—The year 1923–24 is notable chiefly on account of the unusual amount and value for both exhibition and study of the material received, a total of 227 geological accessions, aggregating 159,921 specimens, being recorded. The paleontological collections were the chief beneficiaries, the most noteworthy of the accessions being the large sauropodous dinosaur from the Dinosaur National Monument, Utah, and the Edgar E. Teller and George M. Austin collections of fossils, the last two named comprising at least 125,000 of the total number of specimens received.

The economic collections have been increased by Canadian nickel and silver ores acquired mainly through the interest of Honorary Curator Frank L. Hess, although an instructive series of copper-nickel-silver ores was donated by the Royal Ontario Museum of Mineralogy. A series of diamond-bearing rocks from the Arkansas fields, received through the assistance of H. D. Miser, made possible a more comprehensive exhibit of the occurrence of the diamond than was heretofore shown.

The continued activities of Victor C. Heikes have resulted in the acquisition of good exhibition material to both economic and mineral collections.

An unusual meteoric iron from San Juan County, N. Mex., formed the most interesting accession to the meteorite collection, although an iron from Chile, stone from Kansas, and small quantities of other individuals from Spain and Australia added new falls and finds. These were all acquired by exchanges.

The chief contributor to the mineral collections was Col. Washington A. Roebling, who supplied funds for the purchase of new minerals and made other gifts. Radium-bearing minerals from the Belgian Congo and a number of rare species new to the collections, received as gifts and exchanges, may also be noted. The mineral collection is reported as now 80 per cent complete in species.

A number of cut gems were added to the Isaac Lea collection through the Frances Lea Chamberlain fund.

A petrographic reference series of rocks, numbering some 2,000 specimens, and thought to be without doubt the most important collection, from a scientific standpoint, now in existence, was transferred by the United States Geological Survey.

In addition to the paleontological material mentioned above, collections of Cambrian, Ordovician and Silurian invertebrates were made by Secretary Walcott and members of the staff of the department, and a quantity of foreign material was acquired through gifts and exchanges. A slab of fossil footprints from the Triassic shales of Virginia, received through the courtesy of F. C. Littleton, was added to the exhibits.

Satisfactory progress was made in the care of the collections, though a few changes are to be noted in the exhibits, the installation of mastodon and bison skeletons, a large slab of rhinoceros bones, and the slab showing footprints of a dinosaur being the most important. Expansion of the study series has occupied much of the time of the curators and their assistants. Research work, however, has progressed to the usual extent and has been greatly facilitated by the acquisition of a binocular microscope which was presented to the department by John A. Roebling.

Mineral technology and mechanical technology.—These divisions :e concerned with engineering developments generally and their ıdustrial application. The collections endeavor to visualize by ıodels and original objects the progress made in the mechanical and ectrical fields, in mineral resource industries, and in transportation ıdustries on land, water, and in the air. For some unexplained ıason in past years these collections have been augmented spas-odically, all accessions recorded in any one year being concerned ith a single one or two of the divisions' activities. This year, how-ver, the accessions recorded, while but a little higher numerically, ıhance the collections of every one of the branches in the divisions. hus in mineral technology the glass industry exhibit was brought ınsiderably closer to completion through the generosity of the Corn-ıg Glass Works. Two models of the most recent types of melting ırnaces were presented as well as typical examples of chemical, ıdustrial, and household oven glassware. The Cadillac Motor Co. resented one of the first automobiles made by that company in)03 and also one of its cars made in 1923, the latter being sectioned, aking visible car parts normally hidden from view.

The Automatic Electric Co. donated a complete working unit of ıe Strowger automatic telephone system. In this instance the ex-ibition case is equipped with three telephones which the visitor may)erate and at the same time observe the functioning of the various ırts. To the section of aeronautics there were added the Fokker -2 monoplane, which flew in May, 1923, from New York to San rancisco in a nonstop flight of less than 27 hours, and a helicopter pe of airplane with which Emile Berliner and his son made suc-ssful flights at College Park, Md., in 1923. The water-craft col-ctions were increased first by the addition of a model of the eamship *Leviathan*, transferred from the Alien Property Cus-dian, and second through the courtesy of the Canadian Pacific ailway Co., Montreal, Canada, in lending a model of the steam-ıip *Empress of Russia*, one of the vessels of this company plying ıtween Vancouver and the Orient.

As far as cooperative educational work is concerned, the lecture ork of S. S. Wyer, associate in mineral technology, was of greatest ıportance. During the year he delivered 89 lectures on the subjects : fuel and power resources before many of the schools, normal hools, and colleges in Pennsylvania and before several educational oups outside of that State.

Textiles, wood technology, organic chemistry, foods, and medi-ne.—The collections under the supervision of the curator of tex-es, which, besides textiles, embrace wood technology, foods, organic emistry, and medicine, were increased by many gifts and by trans-

fer of property from other Government bureaus, amounting to over 3,300 objects. The most important of these may be mentioned briefly.

Several large series of industrial specimens illustrating every branch of rubber manufacture, the manufacture of leather and shoes, and the preparation and dyeing of seal, muskrat, and rabbit skins, were added to the collections, through cooperation with national trade associations. Exhibits were presented which show the manufacture and use of new materials from the field of industrial chemistry and include synthetic plastics and hot-molded and cold-molded compositions having high dielectric properties. These materials are used in the manufacture of electric equipment, automobile parts, musical instruments, etc. Other chemical exhibits received during the year include glues, coal-tar dyes, and artificial silk. The textile collections were increased by the gift of fibers, silk and cotton dress and drapery fabric, and a large series of hand-woven textiles: also hand looms and a commercial braiding machine. To the collections arranged to show the importance of wood and the industries based thereon were added products of the hardwood distillation industry, veneered doors, sporting goods made of wood, and paper-pulp products. The collections in the division of medicine were enlarged by 25 models showing advances in sanitary science, specimens of materia medica, and objects associated with the history of medicine in America.

Graphic arts.—The division of graphic arts held throughout the year successful temporary exhibitions of artistic prints, etchings, lithographs, and photographs, which were well attended and favorably mentioned in the press both here and abroad.

The two traveling exhibits of graphic arts were continually in demand, being displayed in 13 cities in 9 different States, and the fall and winter are already well dated up.

No entirely new and complete exhibit for the permanent collections was received, but important additions were made, especially to that of letterpress printing and to etching, the latter subject having been entirely rearranged with numerous additions, the most important of which was Miss Beatrice S. Levy's gift of three aquatint plates for her color print, White House by the Sea. This method is new to the technical series. The division now has all the regular methods of printing etchings in color.

Probably the most important accession received by the section of photography was the motion-picture camera invented by Wallace Goold Levison in 1887. This machine could expose 12 plates in rapid succession from one point. This is probably the first motion-picture camera ever made. Edward Muybridge did not have a motion-picture camera but had a row of separate cameras, each ex-

posed as the person or animal passed in front, by the breaking of a string.

History.—The most notable addition to the historical collection was a number of objects comprising the interior furnishings of an American colonial room, presented to the Museum by Mrs. Gertrude D. Ritter, of Washington, D. C. This collection includes wall paneling, furniture, chinaware, glassware, pewter ware, pictures, textiles, and miscellaneous objects. The wall paneling, made of American pine carved with plain designs and fastened with pegs, was taken intact from the old Bliss homestead located at Springfield, Mass., and includes a corner cupboard of three shelves with original glass doors and hinges and latches of wrought iron. In the cupboard and on the tables are shown the china, glass, and pewter ware belonging to the exhibit. The china includes an exceptionally beautiful bowl of Chinese Lowestoft and a child's tea set of the same ware, a helmet pitcher, and a number of pieces of luster ware of more than usual interest. The glassware includes several pieces of Stiegel ware, a number of plain glass mugs of antique design, a glass pitcher, and a number of glass bottles of rare types. The collection of pewter includes plates, mugs, coffee pots, pepper and salt shakers, dishes, sirup mug, and basin. This collection is unique in character and its presentation marks an epoch in the development of the collections of this type in the National Museum. It is the donor's intention to add to this collection until the furnishings of an entire colonial home have thus been assembled. These will be exhibited as a unit in a house of colonial style to be erected for the purpose in proximity to the present group of museum buildings.

To the collection of costumes of the ladies of the White House, which has for a number of years attracted so much public attention, were added two costumes of great interest. One of these is a white satin evening gown worn by Mrs. Warren G. Harding during the administration of her husband, President Warren G. Harding, 1921–1923, the gift of Mrs. Harding. The other is a gray silk dress worn by Mrs. Benjamin Harrison at the inaugural ball in 1889 on the occasion of the inauguration of her husband, President Benjamin Harrison, and donated by Mrs. James R. McKee, of New York City. Both these costumes were acquired by the Museum through the generous cooperation of Mrs. Rose G. Hoes.

The biographical collections were increased by the gift of a pair of silver-mounted flintlock pistols with leather holsters which were owned during the War of the Revolution by Maj. Gen. Charles Lee, of the Continental Army; a sword, a pair of pistols, and a pair of epaulets owned during the same period by Maj. Jacob Morris, and a number of other relics of less importance. These were presented to the Museum by Victor Morris through the Wisconsin Society of

the Colonial Dames of America. Three silver camp cups owned during the Revolution by Brig. Gen. Anthony Wayne were lent by Mrs. M. W. Stroud. A gold locket containing a lock of the hair of Napoleon I was presented by H. deB. Parsons, Miss Katharine deB. Parsons, and Livingston Parsons, of New York City. A very handsome gold snuffbox, the lid of which is set with diamonds, which was presented about 1836 to Col. René E. De Russy, United States Army, by the Prince de Joinville, was donated to the Museum by Mrs. Laura R. De Russy, of New York City. A silver tureen and platter presented to the Hon. James R. Mann, Republican leader, by Members of the United States House of Representatives, Sixty-fifth Congress, March 3, 1919, were donated by Mrs. Mann.

EXPLORATIONS AND FIELD WORK

The Museum draws its increment in large measure from explorations and expeditions undertaken chiefly by other Government agencies and by private institutions and individuals. This year the Museum benefited from an unusual number of such enterprises. Biological and botanical explorations in North America, Central America, South America, Asia, and various islands added to the collections representing the fauna and flora of various countries, while geological field work was carried on within the borders of our own continent.

During the summer and early fall of 1923 Secretary Walcott, accompanied and aided by Mrs. Walcott, was engaged on geological exploration in the Canadian Rockies in continuation of the work of previous years. Special studies were made of the Mons formation of the Ozarkian system, 3,800 feet in thickness, which on the eastern side of the Columbia River Valley was found to contain four well-developed fossil faunas, indicating its position between the Upper Cambrian and Ordovician systems of the geologic time scale. Collections of fossils illustrating new horizons in the Ozarkian system were made in this area, also in the Upper Cambrian and Silurian limestone of this region, together with small lots of desirable biological and botanical material.

Biological explorations in China included the expedition of the National Geographic Society under Mr. Wulsin along the Yellow River to Lake Kokonor in Thibet and the field work of Mr. Graham in the Province of Szechwan, and of Mr. Hoy in Hunan, all before mentioned. Mr. Graham in his trip to Tatsienlu practically duplicated the route of A. E. Pratt, going by way of Mount Omei, securing topotype material of species based on Pratt's and Potanin's expeditions as well as undescribed material which had escaped his predecessors.

Arthur de C. Sowerby continued his collecting in China for the Museum, under the auspices of Col. Robert Sterling Clark, but on account of the disturbed conditions in that country he was unable to go far afield from his headquarters in Shanghai. The resulting valuable additions furnish serial material for comparison with collections from more remote regions.

An expedition to Japan and eastern Siberia undertaken by Prof. T. D. A. Cockerell at his own expense, primarily for the purpose of collecting and studying insects, was productive of large collections in that class with smaller lots in other natural history classes.

In Siam, Dr. Hugh M. Smith, who is engaged in fisheries investigations for the Government of Siam, collected in a number of localities birds, reptiles, amphibians, and invertebrates, important as linking up collections already in the Museum from the Malay Archipelago and Peninsula with those of the countries farther north.

In the Fiji Islands Dr. Casey A. Wood, a valued collaborator of the division of birds, enlisted the cooperation of several native collectors during a three months' visit, making very important additions of birds from that region, including many species hitherto unrepresented, a notable addition to the Fijian material from the United States exploring expedition under Captain Wilkes. Doctor Wood arranged with his local assistants to continue the work in localities he himself was unable to visit.

Under the auspices of the Bureau of Biological Survey, Department of Agriculture, in conjunction with the Navy Department, Dr. Alexander Wetmore visited Laysan, Midway, Johnson, Wake, and other islands in the Pacific and made large collections, part of which have already been transferred to the Museum.

Islands in the Atlantic were also visited. Dr. W. L. Abbott's expedition to Santo Domingo has already been mentioned, with its prized specimens of the long-lost rodent. In the Virgin Islands of the United States and the Lesser Antilles, Gerrit S. Miller, jr., curator of mammals, made extensive collections of animals and plants for the Museum at his own expense. Explorations in the Bahamas, Cuba, and the Florida Keys in August, 1923, and June, 1924, in connection with experiments in heredity which Dr. Paul Bartsch of the Museum staff is conducting under the joint auspices of the Carnegie Institution of Washington and the Smithsonian Institution, added to the Museum series of mollusks, birds and other natural history specimens from these regions. The United States Navy and the United States Army cooperated by furnishing transportation for the workers.

The expedition of A. H. Fisher to the lower Amazon River, Brazil, on which the Museum was represented by C. R. Aschemeier as

mentioned in the last report, was completed early in the year. The collections made in this region included a few species of mammals and birds new to the Museum.

Under an arrangement with R. O. Marsh, John L. Baer represented the Museum on the Marsh Darien expedition undertaken in the early part of 1924, for collecting anthropological material in a region poorly represented in the anthropological collections. As mentioned elsewhere, Mr. Baer died while on this trip and the collections have not as yet reached the Museum.

Botanical explorations in northern South America conducted under the auspices of the United States Department of Agriculture, the Gray Herbarium, and the New York Botanical Garden benefited the National Herbarium. Dr. A. S. Hitchcock, custodian of grasses, on this exploration spent four months in Ecuador, two months in Peru, six weeks in Bolivia, and a few days in Panama. Large collections were obtained, of which a set of approximately 1,700 specimens, exclusive of grasses, was deposited in the National Herbarium.

Two expeditions undertaken for the Bureau of Entomology of the United States Department of Agriculture by Dr. William M. Mann, assistant custodian of Hymenoptera in the Museum, resulted in collections of insects and also specimens in other classes. The first three months of the fiscal year were spent in Mexico collecting miscellaneous insects and four months in the spring of 1924 in Panama, Colombia, Guatemala, Costa Rica, and Honduras, collecting insects, especially ants.

Another very considerable miscellaneous collection from Guatemala, of which birds formed the conspicuous part, was obtained by Harry Malleis, who visited the Province of Petén for the Bureau of Biological Survey, primarily to obtain living specimens of the ocellated turkey for introduction into this country.

During the spring of 1923 Dr. H. G. Dyar, custodian of Lepidoptera, made a trip to Panama, financed by himself, in company with R. C. Shannon, of the Bureau of Entomology of the United States Department of Agriculture, whose expenses were paid by that bureau, resulting in many thousand insects, including extensive collections of mosquitoes, in which Doctor Dyar was specially interested. Dr. T. E. Snyder, of the Bureau of Entomology, also visited Panama, securing large collections of termites which will be added to the National material.

An expedition from the Department of Agriculture to Panama and Central America was accompanied by Dr. William R. Maxon, associate curator of plants, the field work in Panama, western Nicaragua, and Costa Rica resulting in 4,500 bontanical specimens. The Nicaraguan material will be especially useful in the preparation of the proposed flora of Central America.

The Panama Canal Zone and Costa Rica were visited also by Paul C. Standley, associate curator of plants, the expense of the explorations being borne in part by the Department of Agriculture and by Oakes Ames, who is especially interested in the orchids of Central America. During two months in the Canal Zone there were obtained about 7,000 numbers of plants particularly desired in preparing a popular flora of the zone, and 8,000 numbers, including a large percentage of orchids, were collected during 10 weeks in Costa Rica for use in preparing the flora of all Central America.

An expedition to the west coast of the United States under Dr. H. G. Dyar was in the field at the close of the year, studying larvæ of mosquitoes. This was financed by Doctor Dyar. Dr. J. M. Aldrich, associate curator of insects, was likewise at the close of the year collecting Diptera throughout the high altitudes of the West and on the west coast of the United States and Canada. All of this material will eventually find its way into the National collections.

During the summer of 1923 the National Geographic Society continued archeological explorations at the prehistoric Pueblo Bonito in New Mexico under Neil M. Judd of the Museum staff. The material results have not as yet been officially turned over to the Museum. This was the third season of explorations which are planned to extend over a period of five summers. Mr. Judd had just started the fourth season's work at the close of the fiscal year.

A second expedition under the same auspices, also directed by Mr. Judd, penetrated a previously unexplored section of southeastern Utah, bringing back objects from basket-maker and cliff-dweller habitations.

The expedition to the Dinosaur National Monument, Utah, undertaken by C. W. Gilmore, assisted by N. H. Boss, as mentioned in last year's report, was completed in the middle of the summer of 1923. This had for its object the procuring of one of the large dinosaurs for the exhibition collections. As noted under the chapter on accessions, sufficient material was acquired for a good skeletal mount of *Diplodocus*, exceeding in exhibition value anything acquired in the department of geology in recent years, together with a considerable quantity of miscellaneous fossils representative of the Morrison fauna.

The Great Basin ranges of Nevada and Utah were the subject of stratigraphic and paleontologic work by Dr. Charles E. Resser in furtherance of Doctor Walcott's monographic studies. Of the fossils collected many were from entirely new localities.

Field work by Dr. R. S. Bassler, curator of stratigraphic paleontology, during the year included four separate projects: (1) Field work in the Central Basin of Tennessee, in cooperation with the

State Geological Survey, which resulted in completing the mapping of the geology of the Hollow Springs quadrangle and in securing fossils from that area; (2) in southern Kentucky, at the instance of Dr. Frank Springer, in search of crinoids; (3) in the Niagaran Plain and neighboring area in Ohio, obtaining information as to the region from which the Austin collection was secured; and (4) in northern Tennessee, again under the geological survey of that State, mapping the geology and securing data toward a report on the stratigraphy of the State.

The Upper Cambrian and Ozarkian systems, particularly in Wisconsin, were the subject of the field work in the summer of 1923 of Dr. E. O. Ulrich, associate in paleontology.

The reported discovery of fossil footprints on excavations in the red Triassic shale near Aldie, Va., were investigated by C. W. Gilmore, and numerous dinosaurian footprints were observed at several distinct horizons. A fine slab of these was obtained.

Shorter collecting trips to the Miocene deposits along Chesapeake Bay by N. H. Boss and to near-by localities by E. V. Shannon and W. F. Foshag provided well-preserved cetacean remains from the former and small representative collections of rocks, minerals, and ores from the latter.

The quarries at Deer Isle and Auburn, Me., were inspected by Dr. George P. Merrill, head curator of geology, who also made a geological trip into the northern part of that State.

BUILDINGS AND EQUIPMENT

For some years an additional building to house the National Gallery of Art and the history collections of the United States National Museum has been urgently needed. The removal of the art and history collections would release space in the older buildings that should provide for the growth of the other collections for years to come. The executive and independent offices act for 1924, approved February 13, 1923, authorizes the Regents of the Smithsonian Institution to prepare preliminary plans for a suitable fireproof building with granite fronts for the National Gallery of Art (including the National Portrait Gallery) and for the history collections of the United States National Museum, to be erected when funds from gifts or bequests are in the possession of the regents. A site for the building is designated in the Mall immediately east of the Natural History Building.

The National Gallery of Art Commission, which has for some time been giving consideration to the adequate housing of the art collections, decided at a meeting on December 11, 1923, to raise by private

subscription $10,000 toward preliminary plans for this art and history building, and that amount was soon subscribed. The Board of Regents of the Institution accordingly on February 14, 1924, selected Charles A. Platt, of New York City, on the recommendation of the commission, as the architect to prepare preliminary plans for the proposed building. It will be recalled that Mr. Platt was the architect of the Freer Gallery of Art. Senator Henry Cabot Lodge proposed an amendment to the second deficiency bill on April 17, 1924, appropriating $2,500,000 to begin construction of a building the total cost of which should be $7,000,000, but this failed to be enacted into law. It is to be hoped that favorable action will be taken in the next session of Congress.

The various buildings housing Museum collections have by the exercise of the strictest economy been maintained in good condition. The usual repairs were made to walls, ceilings, and roofs, and to portions of the roadway on the east of the Natural History Building. The café in the Arts and Industries Building was closed for the last two weeks in May and given a needed thorough renovation. Other changes in the same building afforded better accommodations for checking umbrellas, for the public-telephone booth, and for the watch service, and better illumination under the galleries.

The heating season was two weeks longer than the preceding one, consuming 3,267.2 tons of bituminous coal and 15.8 tons of stove coal, the former at an average cost of $7.79 per ton against $9.06 the preceding year. Minor repairs of the power plant and adjustments permitted the buildings to be more satisfactorily heated than in previous years. The electric generating equipment for the first time since the installation of the power plant has carried a load approximating its maximum capacity, due to natural increase in demand for current, as well as the addition of the Freer Building. The electric feeder leading into the Natural History Building from the Government contractor's line in B Street was enlarged to care for this increased load.

The ice plant produced 301.1 tons of ice, at a cost of $3.003 per ton, exclusive of labor. During the summer of 1923 it was unable to produce sufficient ice to meet the demands of all the buildings in the Smithsonian group. Repairs and renovation in the spring of 1924 made its output meet the demand to the close of the fiscal year.

The Museum fire-fighting equipment was given its customary regular inspections and tests, and it is expected that all deficiencies will be remedied shortly. Congress has provided for additional fire protection for the Smithsonian and National Museum Buildings by an item in the executive and independent offices act approved June

7, 1924, and arrangements have been made with the Commissioners of the District of Columbia for the installation in the Smithsonian Park of additional modern fire hydrants.

The Museum, in connection with the transfer of the Government collection of coins and medals from the Philadelphia Mint, acquired the exhibition cases in which the collection had been displayed. The cases were built to fit a special octagonal room in the Philadelphia Mint. They consisted of four wall cases, of three sections each, built to fit the angular spaces, and a central case—a double-faced polygon of 14 units, access to the interior fronts of which is through the space which would have formed a fifteenth unit had the polygonal construction been completed. By shifting the historical collection, the west north range of the Arts and Industries Building was assigned to the collection from the mint, together with other similar material already in the custody of the Museum. The dismantling of the highly finished, many angled cases in Philadelphia and their reerection here reflect great credit upon the Museum cabinetmakers and their associates in the undertaking.

There were constructed in the Museum workshops also 13 exhibition cases and bases and 119 pieces of storage and laboratory furniture. In addition 10 items of storage, laboratory, office, and other furniture were procured by contract.

MEETINGS AND RECEPTIONS

The National Museum is prevented by its limited maintenance funds from providing public lectures, as it would like to do, on the many subjects in which it is interested. It is always ready, however, to assist as far as possible other governmental, scientific, and local organizations which so disseminate knowledge.

The auditorium and council rooms served for 105 meetings during the year, all of which were as usual open to the public. These gatherings included the National Conference on Outdoor Recreation called by President Coolidge, which met in the Museum from May 22 to 24; the nineteenth annual meeting of the American Association of Museums, May 10 to 13; the twenty-third annual convention of the National Association of Postmasters, October 10–12; one session on September 3 of the twenty-fourth annual convention of the United National Association of Post Office clerks; the meeting of the Northern Nut Growers Association, September 26–28; the meeting of adjutants general of the National Guard of each State, under the auspices of the Militia Bureau, War Department; two motion-picture exhibitions by the Public Health Service; a three-day plant quarantine conference of State and Federal representatives and an all-day conference on the Japanese beetle and the

Almeria grape, both under the Federal Horticultural Board; a conference on conservation of the prong-horned antelope, under the Biological Survey; two meetings with addresses before employees of the Forest Service; a motion-picture exhibition by the Department of Agriculture, and a lecture by the Secretary of Agriculture before the American Committee on the International Institute of Agriculture; one session of the National Conference on Vocational Rehabilitation of Civilian Disabled, under the Federal Board of Vocational Education; a series of health lectures by eminent physicians arranged by The Woman's Welfare Association on alternate Sunday afternoons from January 13 to April 27, inclusive; the celebration by the Shakespeare Society of Washington of the tercentenary (1623–1923) of the publication of the first folio of Shakespearean plays on November 7 and 8, and a benefit for the National Monticello Association by the same society on December 12; the fifth annual meeting of the American Classical League; a series of lectures for Boy Scouts and Girl Scouts; the regular meetings of the 1923–24 season of the Anthropological Society of Washington, the Entomological Society of Washington, the American Horticultural Society, and the Washington (D. C.) Chapter of the Wild Flower Preservation Society of America; two meetings by the Audubon Society of the District of Columbia; and single meetings under the auspices of the Washington Society of Engineers, the Writers' League of Washington, the Southern Maryland Immigration Commission for the purpose of organizing a garden home association, the Potomac Garden Club, the Light Bearers of Washington, the Puerto Rico Society of Washington, Federal Post No. 824 of the Veterans of Foreign Wars of the United States, the Federal Photographic Society, and the Smithsonian Relief Association.

The exhibition halls were opened for four evening receptions. On November 13 a reception was tendered to the delegates and friends of the Southern Medical Association, then holding its seventeenth annual meeting in Washington. On January 22 the Archaeological Society of Washington, affiliated with the Archaeological Institute of America, arranged for a reception in the space assigned the National Gallery or Art, immediately following a lecture in the auditorium by Count Byron Kuhn de Prorok on "Excavations in Carthage." On April 22 the regents gave a reception to the members and friends of the American Chemical Society, as a part of their spring meeting in Washington, April 21–25, which was unusually well attended. On May 22 the first floor and the foyer rooms on the ground floor were thrown open for the reception to the delegates to the National Conference on Outdoor Recreation.

MISCELLANEOUS

The number of visitors to the Natural History Building during the year aggregated 540,776; to the Arts and Industries Building, 290,012; to the Aircraft Building, 43,534; and to the Museum exhibition halls in the Smithsonian Building, 104,601.

As a mark of respect to President Warren G. Harding, all the exhibition halls, as well as the offices, were closed at noon, August 3, 1923, for the balance of that day, and again from 1 p. m. on August 7 until after the funeral at Marion, Ohio, on August 10. Visitors were also denied entrance to the Aircraft Building from January 11, 1924, to February 4, to permit of the installation of the Fokker airplane *T-2*.

The Museum published 8 volumes and 44 separate papers during the year. A publication in the bulletin series of several years ago, "The Mineral Industries of the United States—Manufactured Gas in the Home," was reprinted for a second time through the financial assistance of the author, Samuel S. Wyer. Museum publications to the number of 78,734 copies were distributed by the Museum to libraries and individuals on the regular mailing lists and in response to special requests. The distribution exceeds the number of copies printed during the year by nearly 1,000. Some 250,000 labels, representing nearly 1,100 forms, were also printed, and 163 books were bound for the library.

The Museum is more and more dependent upon donations and exchanges in building up its library, since the number of books it can purchase with its small book appropriation is constantly dwindling.

Books are very necessary tools in the classification as required by law of objects intrusted to its custody. The additions to the Museum library this year comprised 1,521 volumes and 2,667 pamphlets, making a total of 164,748 titles in the library. The number of loans made was 10,577, of which 6,139 went to the sectional libraries of the Museum.

Three members of the staff left the Museum through the operation of the retirement act: W. I. Adams, disbursing agent for nearly 20 years, with service in another bureau of the institution aggregating 28 years in all; Joseph Horan, sergeant of watch, with a service of 42 years; and A. F. Adams, classifier in the library, whose retirement, granted in October, 1923, was effective from June 2, 1921, with a service of 39 years.

The necrology for the year included Miss E. D. Tabler, clerk for nearly 41 years; J. J. Dolan, who served in various capacities for 32 years; George W. Spier, honorary custodian of watches; John L. Baer, Museum representative on the Marsh Darien expedition; and

Charles M. Hoy, a field naturalist collecting in China for the Museum through the generosity of Dr. W. L. Abbott. The Museum also lost by death a number of its long-time benefactors, including Rev. Alfred Duane Pell and Ralph Cross Johnson.

Respectfully submitted.

W. DE C. RAVENEL,
Administrative Assistant to the Secretary,
In charge United States National Museum.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 2

REPORT ON THE NATIONAL GALLERY OF ART

SIR: I have the honor to submit the following report on the affairs of the National Gallery of Art for the year ending June 30, 1924:

The fourth year of the existence of the National Gallery as a separate administrative unit of the Smithsonian Institution has witnessed substantial advance in directions corresponding closely with those of preceding years, although its activities have been restricted by the lack of funds for the purchase of works of art, for travel and for active promotion. The staff, limited to two members, has been occupied largely in the current work of the gallery, with receiving, recording, cataloguing and installing collections, permanent and temporary. A number of important works were received during the year notwithstanding the fact that the gallery is without suitable space for the display of additional exhibits. The discouragement due to the shortage of gallery accommodations is, however, greatly lessened by the well-grounded expectation that additions of great importance await only the fulfilling of stipulated conditions and by the further reasonable expectation that when the contemplated gallery building is completed progress will be greatly accelerated.

During the year constant effort has been made to impress upon the country the urgent need of a national gallery building, without which little progress can be made. A majority of the art works now owned by the Nation have been acquired simply because there happened to be available gallery space in the Natural History Museum in which collectors could see their treasures properly installed. Although Congress, in 1921, set aside an appropriate site for a gallery building, it was left to the Institution to obtain the funds necessary for the employment of an architect to prepare the plans and for the erection of the building. As the result of an appeal for the former purpose $11,000 was raised and Mr. Charles A. Platt was engaged on the plans, this work being under way at the close of the year. It is feared, however, that funds for the erection of the building can not be obtained in this way, since the people incline to the view that the Nation should provide a building required for purely national purposes.

It is anticipated that Congress will in the near future come to feel he urgent need of a home for the valuable works of art that patriotic citizens have contributed to the Nation and for the still richer ontributions that may be confidently expected when a gallery building worthy of the Nation is provided. The need of an additional uilding in the Smithsonian group is strongly emphasized by the ct that this building when completed will be called upon to commodate not only the arts of painting, sculpture, architecture, d all the other arts in which the esthetic is a dominant feature t the extensive collections of the department of American history hich now encroach so lamentably on the space rightfully claimed the scientific departments of geology, anthropology, archeology, d natural history.

The recent introduction in the United States Senate by Senator odge of an amendment to the deficiency appropriations bill proiding for a gallery building gives gratifying assurance of the wakening of public interest in national art. The amendment ofered is as follows:

To enable the Regents of the Smithsonian Institution to commence the erecon of a suitable fireproof building with granite fronts for the National Galry of Art, including the National Portrait Gallery and the history collections the United States National Museum, on the north side of the Mall between e Natural History Building and Seventh Street, $2,500,000: *Provided*, That e total cost of said building complete, including heating and ventilation apratus and elevators, shall not exceed $7,000,000.

Among the agencies engaged in promoting the gallery's interests e American Federation of Arts has taken a leading place. The sk of arousing the people to a realization of the backwardness of e art side of American culture development is intrusted to the 0 chapters of the Federation distributed widely throughout the tates. In like manner illustrated lectures have been widely prented, two sets of colored lantern slides illustrating the gallery llections being in extended use, one under the auspices of the Fedation of Arts and the other of the Federation of Women's Clubs. adio broadcasting has also been utilized with good effect.

NATIONAL GALLERY COMMISSION

The third annual meeting of the National Gallery Commission was ld in the regents' room of the Smithsonian Institution, December , 1923, the following members being present: Herbert Adams, W. . Bixby, Joseph H. Gest, John E. Lodge, Gari Melchers, Charles oore, James Parmelee, Charles D. Walcott, and William H. olmes.

The secretary of the commission presented a report on the activities of the gallery for the year and reports of the standing and special committees followed.

A number of important topics presented for consideration by the commission were gone over in all necessary detail. It was stated by the secretary that the war portrait collection, after two years' circulation by the American Federation of Arts, had been returned to the gallery and placed on exhibition in association with the World War exhibits.

The committee appointed by the commission in 1922 to advise with the committee on the purchase of works from the Ranger fund, Messrs. Redfield, Melchers, and Holmes, made no report, but it was announced that during the year 11 purchases were made from this fund none of which, however, were assigned to the National Gallery.

Attention was given to the resolution submitted by the regents, February 8, 1923, requesting consideration of the suggestion of certain architects that a museum of architecture be founded in connection with the Institution. After discussion, the following resolution was adopted:

Resolved, That the Commission of the National Gallery of Art recommend to the Regents of the Smithsonian Institution the inclusion of a division of historical architecture in the National Gallery of Art. The division should seek to establish standards in architecture, furniture, and landscape architecture for the benefit of students and others interested in the preservation of the historic buildings of America.

Extended consideration was given to the important problem of a national gallery building, as to its character as the prospective joint home of national art and national history, and as to the raising of funds for the construction of a building worthy of its purpose and of the American Nation. The various agencies that might be enlisted in the work were reviewed, and the impression prevailed that obtaining funds for the purpose by subscription was not within the range of feasibility. The possible adaptation of the George Washington Memorial Building, now in course of construction, to the purposes of art and history was suggested.

It was agreed that the first and essential step was the preparation of plans for the proposed structure, and the raising of a fund for the purpose was considered. Discussion led to the announcement by a member of the commission that he would be responsible for one half of the amount required when the other half is raised. Another member indicated that he would gladly help, and a committee of three—Mr. Parmelee, Mr. Moore, and Mr. Walcott—was appointed to take charge of the task of completing the fund.

The election of officers and members of the commission and members of the committees followed. The resignation of Mr. Daniel C. French as a member of the commission was announced, and Mr. Gari Melchers was selected to succeed him as chairman of the commission. Owing to the nonacceptance of election to membership on the commission of Mr. Denman Ross, Mr. James E. Fraser was elected to fill his place, and owing to a wrong understanding of the resignation of Mr. French, which was intended merely as resignation as chairman of the commission and not from membership in the commission, Mr. Joseph E. Breck was selected to fill the supposed vacancy. Mr. Breck, however, declined the appointment, making possible the restoration of Mr. French to the commission from which his resignation had been accepted under a misapprehension.

A special meeting of the gallery commission was held in the Regents' room of the Institution February 11, 1924, to consider the report of the committee appointed at the December 11 meeting of the commission to complete the raising of the $10,000 fund estimated as required for the preparation of preliminary plans for a national gallery building. Six members of the commission were present—Gari Melchers, James Parmelee, Herbert Adams, Charles Moore, Charles D. Walcott, and W. H. Holmes. The funds committee of three, Messrs. Parmelee, Moore, and Walcott, reported that $11,000 had been subscribed. The commission then proceeded to consider the question of the character of the proposed building, after which, complying with the request of the Board of Regents of the Institution, a vote was taken on the selection of an architect to prepare plans. The vote of members present, supplemented later by votes of those not present at the meeting, resulted in the naming of Charles A. Platt.

The advisory committee on acceptance of works of art met on December 15, 1923, and the following works, received subsequently to the previous annual meeting but in large part listed in the annual report for 1923, were favorably considered: Twenty-two paintings in pastel, comprising 71 portraits of survivors of the Civil War, Federal and Confederate, 50 years after the Battle of Appomattox, painted by Walter Beck; gift of the artist. Thirteen portraits painted by eminent American artists and representing distinguished leaders of American and allied nations in the war with Germany; presented by the national art committee. Bust in bronze of Jeanne d'Arc, by Madame Berthe Girardet; presented to the American Nation by the artist, through Mrs. John Jacob Hoff, in these words: "To the American people in memory of what our soldier boys have

done in France at a crucial time of need"; acceptance by the Smithsonian Institution was approved by the committee. Mantel of carved white holly, with fireplace of pink Numidian marble, from the recently demolished residence of the late Benjamin H. Warder, 1515 K Street NW., Washington, D. C., Henry Hobson Richardson, architect; gift of William W. W. Parker. Four paintings, The Storm, by Ludolf Backhuysen; seated figure of a Turk, by Eugene Delacroix; portrait of John Head, by Gilbert Stuart; and the portrait of A Lady, by Gilbert Stuart; bequest of George H. Story. The Philistines Attacked with the Plague, by Nicolas Poussin—sketch for the large painting in the Louvre, Paris; gift of W. H. Holmes. Two paintings by Sarah Paxton Ball Dodson, Wild Parsley and Une Martyre; gift of Richard Ball Dodson.

ART WORKS ADDED DURING THE YEAR

The permanent accessions for the year are limited in number and are as follows:

Four paintings, the bequest of George H. Story: Portrait of A Lady and portrait of John Head, by Gilbert Stuart; panel by Eugene Delacroix; The Storm, by Ludwig (Ludolf) Backhuysen.

Two paintings by Sarah Paxton Ball Dodson (1847–1906): Wild Parsley, painted at Belvedere, Brighton, England, being a study for the foreground of The Annunciation, a painting now in the Pennsylvania Academy of Fine Arts, Philadelphia; and Une Martyre (Saint Thecla), exhibited in the Paris and Munich Salons of 1891. Gift of Richard Ball Dodson, Esq., Brighton, England.

Portrait in pastel by Walter Beck of the naturalist, John Burroughs, painted at Woodchuck Lodge, Delaware County, N. Y., in 1912. Gift of "an admirer of John Burroughs."

L'Empereur, a large canvas by J. Carroll Beckwith (1852–1917), representing the bronze statue of Napoleon projected against a brilliant sunset, received at the gallery as a loan from the artist in 1913. Presented by Mrs. J. Carroll Beckwith in 1924.

The First Gun at Fort Sumter, by Alban Jasper Conant (1821–1915), a large canvas in which the portrait of Maj. Robert Anderson, United States Army, standing, is projected against a great gun in action. Major Anderson was in command at Fort Sumter upon its surrender in 1861 and was one of the founders of the United States Soldiers' Home, Washington, D. C. Gift of the Hon. Larz Anderson "in anticipation of the day when there shall be a national portrait gallery."

The Philistines Attacked with the Plague, by Nicolas Poussin—etch for the large painting in the Louvre, Paris. Gift of W. H. olmes.

LOANS ACCEPTED BY THE GALLERY

Mrs. Ralph Cross Johnson deposited a collection of 11 early hristian paintings, referred to as "primitives," by Italian, Dutch, lemish, and Spanish masters, and indicates her intention to make e "deposit" a permanent addition to the gallery. The list llows:

M. Albertinelli (1474–1515): Holy Family and St. John.
Bonifazio of Venice (1491–1553): Christ Addressing the People.
Giorgione (1477–1510), attributed to: Head of Christ.
B. van Orley (1509–1542): Adoration of the Kings.
Josef de Ribera (1588–1656): Judas (head).
G. B. Tiepolo (1696–1770): Baptism of Christ; Christ in the Temple.
Rogier Van der Weyden (1399–1464): The Entombment.
Leonardo da Vinci (1452–1519), attributed to: Head (old man).
Artist undetermined: Head of young woman.
Artist undetermined, Old Flemish: Virgin and Child (with apple).

Mrs. Ralph Cross Johnson has intrusted to the gallery for temrary care and display the following valuable works:

Sir William Beechey (1753–1839): Portrait of the Duke of Sussex.
Sir Augustus W. Callcott (1779–1844): St. Paul's and Black Friar's Bridge.
John Constable (1776–1837): Large landscape, Dedham Vale; small landspe, Heavy Clouds.
William Dobson (1610–1646): Portrait of the poet Waller.
C. Janssens van Ceulen (died between 1662–1664): Portrait of Henry, Prince Wales (or Prince Charles)?
J. Jordaens (1593–1678): Portrait of Rubens' wife.
Sir Thomas Lawrence (1769–1830): Self portrait.
Jan Molenaer (16—?–1685): Festive scene.
Sir Henry Raeburn (1756–1792): Portrait of a man.
Sir Joshua Reynolds (1723–1792): Portrait of Richard Brinsley Sheridan; rtrait of Lord Lifford; portrait of Mrs. Lloyd; portrait of Lord Roth.
David Roberts (1796–1864): Interior of New College, Oxford.
William Clarkson Stanfield (1793–1867): Marine, Approaching Storm.
Jakob van Strij (1756–1815): Dutch landscape, with figures.
Richard Wilson (1714–1782): Italian landscape; landscape; landscape.
Undetermined artist: Portrait of Mr. Ralph Cross Johnson.

Mrs. Marshall Langhorne, daughter of the late Ralph Cross Johnn and Mrs. Johnson, has intrusted to the gallery for temporary care d display the following valuable works:

ohn Constable (1776–1837): Landscape.
homas Gainsborough (1727–1788): Landscape; small landscape.
. Guardi (1712–1793): Scene in Venice.

John Hoppner (1758–1810): Portrait of an Irish gentleman.
Sir Godfrey Kneller (1646–1723): Portrait of a gentleman.
Sir Peter Lely (1618–1680): Portrait of the Viscountess Hatton.
P. Moreelse (1571–1638): Portrait of Judith van Volbergen.
Sir Henry Raeburn (1756–1823): Portrait of a boy.
Jan Steen (1626–1679): The Doctor's Visit.
Richard Wilson (1714–1782): Landscape.

Two paintings from the bequest of Mrs. Cassie Mason Myers Julian-James to the United States National Museum: Rustic Dance, by Jean Antoine Watteau; and a Study for the Head of a Large Picture, by Van Dyck. Lent by the Museum.

Portrait of President Warren G. Harding, by E. Hodgson Smart. Lent by the artist.

Three paintings, lent by Mrs. John Biddle Porter, of Washington, D. C., which formerly belonged to her grandfather, the Hon. Richard Rush, Regent of the Smithsonian Institution, 1846–1859: Mrs. Siddons in the Tragic Muse (copy by Rembrandt Peale of Sir Joshua Reynolds' celebrated painting in the Huntington collection; Milton Dictating to his Daughter (Copy by Rembrandt Peale); portrait of Hon. Richard Rush (copy of the painting by Healy).

Portrait of Associate Justice Pierce Butler, of the United States Supreme Court, by Nicholas Richard Brewer. Lent by the artist and withdrawn before the close of the year.

Miss Annie A. Wells, of Washington, D. C., has lent two medieval paintings (small panels).

Portrait of Capt. John Lawson at the age of 5, by Sir Joshua Reynolds, and portrait of Benjamin Franklin, engraved by F. Janinet, 1789. Lent by Mrs. Robert J. Walker, through Mrs. Henry T. Bull. Fort Riley, Kans.

Portrait of Chief Justice Joseph C. Hornblower and portrait of Mary B., his wife, by artist unknown; portrait of Roderick Austin, attributed to Sir Godfrey Kneller; and painting representing a sacrifice interrupted by soldiers, artist unknown. Lent by Mrs. Caroline B. Hornblower, Washington, D. C.

Portraits by Gilbert Stuart, of Benjamin and Sarah Tappan, owned by Margaret and Anna Hulett. Lent by Mr. H. K. Bush-Brown, Washington, D. C.

Portrait of the Hon. James R. Mann (1856–1922), late Member of Congress, by Gari Melchers, N. A. Lent by Mrs. James R. Mann.

LOANS BY THE GALLERY

Two paintings, Portrait of a Lady, by Andres Zorn, and the portrait of Henry Fuller, 1873, by George Fuller, were lent to the Dallas Art Association, Dallas, Tex., for its fourth annual exhibi-

tion, held November 14–28, 1923. These works have been returned to the gallery. The exhibition was international in character, and a distinguished collection was secured for display.

The Happy Mother, by Max Bohm, was exhibited at the Art Center, Washington, D. C., on the occasion of a memorial meeting to the artist, October 20–21, 1923. Mr. Bohm died on September 23, 1923, at Provincetown, Mass.

Three group portraits, comprising the Mosby triptych, from the collection of pastel portraits of Union and Confederate Veterans of the Civil War, by Walter Beck, were lent to the Brooks Memorial Art Gallery, Memphis, Tenn., for exhibition there during the Confederate reunion in June, 1924. They have been returned to their places in the gallery.

Two paintings by J. Alden Weir—Upland Pasture and The Gentlewoman—were lent to the Metropolitan Museum of Art for a memorial exhibition of the work of that artist held in the Gallery of Special Exhibitions from March 17 to April 20, 1924. These paintings have been returned to the gallery.

Three paintings—Birch-clad Hills by Ben Foster, A Family of Birches by Willard L. Metcalf, and The Island by Edward W. Redfield—were lent to the American Federation of Arts, which assembled and sent, through the cooperation of the Department of State and the United States Shipping Board, an exhibition of paintings by American artists to be shown at the great international exhibition in Venice during this spring and summer, 1924.

Thirty paintings by contemporary American artists, largely from the William T. Evans collection, were lent to the American Federation of Arts for its traveling exhibition during the season of 1923–24. These paintings were shipped to the Michigan Art Institute at Detroit for its exhibit of August 31 to September 8, 1923, and have since been shown at Nashville, Tenn., Kansas City, Mo., Peoria, Ill., Memphis, Tenn., Lincoln, Nebr., Clay Center, Kans., and New Orleans, La. They have been returned to the gallery.

The painting by John La Farge, entitled "The Visit of Nicodemus to Christ," was lent to the American Federation of Arts for exhibition at the Carnegie Public Library, Fort Worth, Tex. Since returned to the gallery.

THE HENRY WARD RANGER FUND

Since the paintings purchased during the year by the Council of the National Academy of Design from the fund provided by the Henry Ward Ranger bequest are, under certain restrictions, prospective additions to the national collection the list may be given in

this place. The names of the institutions to which they have been assigned are as follows:

Title	Artist	Date purchased	Assigned
31. The Hurrying River	Robert H. Nisbet, A. N. A.	Dec. 18, 1923	Telfair Academy of Arts and Sciences, Savanna, Ga.
32. The Little Princess	Karl Anderson, A. N. A.	do	Cedar Rapids Art Association, Cedar Rapids, Iowa.
33. Evening Interior	John C. Johansen, N. A.	do	The Columbus Gallery of Fine Arts, Columbus, Ohio.
34. Captain Taylor's Sister.	Ernest L. Ipsen, A. N. A.	do	Free Public Art Gallery, Dallas, Tex.
35. Far Away and Long Ago.	F. Ballard Williams, N. A.	Apr. 14, 1924	Arnot Art Gallery, Elmira, N. Y.
36. Midsummer	William S. Robinson, N. A.	Apr. 7, 1924	
37. The Bathers	Spencer Nichols, A. N. A.	do	
38. The Little Princess	Arthur P. Spear, A. N. A.	do	Waco Art League, Waco, Tex.
39. The Necklace	Richard E. Miller, N. A.	Apr. 14, 1924	
40. The Brook at Carversville.	E. W. Redfield	do	Free Public Library of Jersey City, Jersey City, N. J.
41. Clearing after September Gale — Maine Coast.	Howard Russell Butler, N. A.	Apr. 7, 1924	

SPECIAL EXHIBITIONS HELD IN THE GALLERY

A collection of nine paintings by the Tuscan artists Francesco Gioli (1846–1922) and Luigi Gioli, lent by the Royal Embassy of Italy, Washington, D. C. These works were shown on screens in the totem-pole room at the south end of the gallery.

A special joint exhibition of paintings by Savely Sorin and sculptures of Seraphin Soudbinine was held in the large central room of the gallery. The opening view, cards for which were issued by the Smithsonian Institution, took place on the afternoon of January 10, from 2 to 4.30. The exhibition closed on January 27, 1924.

An exhibit of the art work of Viennese children, pupils of Professor Cizek, of Vienna, was held in the lobby of the Natural History Building, under the auspices of the American Federation of Arts, May 7 to 19, 1924. This exhibit is being circulated in this country under the auspices of the Rockefeller Foundation.

INSTALLATION OF THE WORLD WAR PORTRAITS

In the annual report for 1923 a brief account was given of the painting and subsequent history of the World War portrait collection provided by the National Art Committee, and it may be desirable here to repeat the statement there made to the effect that the original plan for the acquirement of the collection for the Nation has not as yet been fully carried out. In order that the gift of

these portraits might have a distinctly national character, it was planned that a group of two or more, financed by citizens of any city, should be inscribed as presented by that city. Thirteen of the portraits were in this manner added to the national collection, while eight await the reawakening of the patriotic impulse that inspired the original movement in behalf of a World War collection.

In 1921 the collection was turned over to the American Federation of Arts by the committee for exhibition purposes, and was shown in 25 of the principal American cities. On arrival in Washington, June 12, 1923, the portraits, 20 in number, and 1 portrait group, supplemented later by a portrait of the Queen of the Belgians, were installed in the foyer of the New National Museum, in direct association with the great collection of World War historical exhibits. This proved unsatisfactory, however, and space was finally provided on the second floor of the Natural History Museum, where partitions were erected inclosing a floor space 34 by 37 feet. This improvised gallery, artificially lighted, although separated from the gallery proper, proved to be quite satisfactory, and the portraits are shown to good advantage.

DISTRIBUTIONS

Loans have been withdrawn by their owners as follows:

Evening; Junipers in Winter, by Ludwig Dill; withdrawn by the American Federation of Arts.

Portrait of Associate Justice Pierce Butler, of the United States Supreme Court, by Nicholas Richard Butler; withdrawn by Mr. Butler.

Forty-one paintings by Ossip Perelma; withdrawn by Mr. Perelma.

Portrait of San Lorenzo Guistiniano, by Gentili Bellini; withdrawn by the American Red Cross through Miss Irene M. Givenwilson, curator of the Red Cross Museum.

Painting entitled "A Prayer to St. Genevieve," by Mme. la Marquise de Wentworth; withdrawn by Dr. J. H. Gore.

NECROLOGY

The announcement of the death of Ralph Cross Johnson on July 9, 1923, at his summer home, city of Belfast, Me., where he and Mrs. Johnson had settled for the summer, came as a great surprise and is deeply regretted by the Smithsonian people, and very especially by the staff of the National Gallery. Mr. Johnson's gift to the gallery of masterpieces of painting is regarded as one of the richest contributions ever made to the art treasures of the Nation.

The Rev. Alfred Duane Pell, D. D., of New York City, a benefactor of the gallery, died in April, 1924.

Appended to this report is a list of portraits and portrait sculpture, approximately 450 in number, belonging to the Smithsonian Institution and its branches (not printed). It is intended to serve as a record of the Institution's collections in these branches and for convenience in organizing the contemplated national portrait gallery.

Respectfully submitted.

W. H. HOLMES, *Director.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 3

REPORT ON THE FREER GALLERY OF ART

ir: I have the honor to submit the fourth annual report on the er Gallery of Art for the year ending June 30, 1924.

THE COLLECTION

Work completed during the year includes the examination, classi- tion, and cataloguing of Chinese and Japanese stone sculptures paintings. Further work has been done in the preservation of paintings; 40 Whistler water colors and pastels have been re- ned, and the titles of those on exhibition have been painted upon frames. The relettering of titles and references upon the mounts Whistler etchings and lithographs is well advanced and the work emounting a certain number has been begun.

lentification photographs of all objects in the collections of pot- , stone sculpture, jade, and bronze, and of a number of Chinese itings in panel form have been made. These photographs are inted upon the cards of the general catalogue and provide an but accurate means of reference which saves much handling of collections. In response to requests other photographs and slides e been made, reproducing not only objects in the collection, but cases and other details of installation, as well as views in and it the building.

uring January and February a special exhibition of 136 Whistler ings, dry points, and lithographs was on view in Galleries I, II, and IV. In May the Chinese *makimono*, shown in Gallery XIV, e installed in cases built to receive them. Other changes in ex- tion involved 42 oil paintings, 14 water colors, 20 pastels, 5 ian paintings, 3 Persian paintings, 2 Chinese paintings, 2 Chinese izes, 2 Chinese sculptures, 1 piece of Korean pottery, 1 Japanese iting.

ne thousand four hundred gallery books, giving detailed infor- ion about objects on exhibition, have been compiled, mimeo- hed, and bound for use in all the Whistler galleries, including Peacock Room. Through the courtesy of the Boston Museum of e Arts, the *Synopsis of History*, a parallel chronological table pared for the use of students, has been issued in a Freer Gallery

edition, which has had a second printing of 500 copies, while our pamphlet giving general information about the gallery and collections has reached a third printing of 3,000 copies. One thousand four hundred and eighty-two copies of the foregoing publications have been sold at the north entrance and on order.

Additions to the collections by purchase are as follows:

BRONZE, CHINESE

23.1. Ceremonial vessel of the type *chia*. Chou dynasty, 1122 to 255 B. C.
23.2. Toilet box of the type *lien*. Six Dynasties, sixth century (?).

PAINTING, INDIAN

23.3. Jaina Illuminated MS. of the Kalpa Sūtra, fifteenth century.
23.7. Pañcama Rāginī. Rajput, Rājasthāni. About A. D. 1600.
23.8. The gracious manifestation of Devī. Rajput, Rājasthāni, seventeenth-eighteenth century.
23.9. The death of Bhīsma. Rajput, Pāharī (?) seventeenth century (?).
23.10. Damayantī's Wedding Procession. Rajput, Pāharī (Kāṇgrā). From the Nala-Damayantī series. Late, eighteenth century.
23.11. From the Nala-Damayantī series. Rajput, Pāharī (Kāṇgrā). Late eighteenth century.
23.12. From the Nala-Damayantī series. Rajput, Pāharī (Kāṇgrā). Late eighteenth century.
23.13. From the Nala-Damayantī series. Rajput, Pāharī (Kāṇgrā). Late eighteenth century.

PAINTING, PERSIAN

23.4. Burning Idols. About A. D. 1350.
23.5. From a Shah Namah MS. Zoḥak feasting. About A. D. 1300.
23.6. Majnun. About A. D. 1500.

SCULPTURE, CHINESE

24.1. Taoist divinities and floral designs. Engraved limestone lunette. T'ang dynasty, seventh-eighth century.
24.2. A Buddhist procession of musicians and a dancer. Limestone relief. T'ang dynasty, eighth-ninth century.

Additions to the library, by gift and purchase, comprise 7 maps, 134 pamphlets, and 145 books and periodicals in various Asiatic and European languages. A list of these additions accompanies this report. (Appendix A, not printed.) The necesary work of examining the Chinese texts for omissions and duplications due to faulty printing and binding has been begun and is still under way. Seventy-four volumes of European books have been rebound.

BUILDING AND EQUIPMENT

The workshop has built during the year, one 15-foot case, three 12-foot cases, and two 9-foot cases, with easels to be placed in them; also, four 70-inch cases, two small square cases, and six stands for

ects shown in cases. Six new wooden frames for cases were made l the glass tops for these assembled. For this work a table and k with a metal pan was built. Two new pedestals for stone lptures were built and the sculptures mounted. The shop has ıde also 40 butternut picture frames, which were sent away to be ded. 58 reeded French walnut frames, 24 frames for gallery and ıer signs, and one large American walnut frame for hanging a -fold screen. In the autumn a removable vestibule door for ıter use was built and installed at the north entrance. In con- ction with the use of the auditorium, the shop built a portable ıoden platform to be placed at times on the concrete stage, and ted up closet No. 10 as a cloak room, made a stand and lockable ver for the projection lantern, built a portable barricade, and hung the door leading from the auditorium to the emergency exit. ıcks were placed on all storage cases in storage rooms 3 and 4, and ımerous fittings, such as bronze clamps for *makimono* on exhibit- ın, a map drawer in the curator's office, a device for hanging *kemono* for examination, stands with frames for notices, etc., were ıde.

A portable scaffold was built for use in the court in cleaning win- ws; the joints of the coping of the main walls and court walls re covered with felt and cement; a picture molding was put on the st wall of study room No. 1; one section of a new device for modi- ing the light has been made and installed in the attic; and mis- llaneous repairs have been made on objects in the collection and furniture and building.

The shop has also recolored the east wall of Gallery XVI, painted e floor of study room No. 2, painted numbers in the various sec- ons of attic and sub-basement in accordance with the architect's an, painted the underside of the skylight glass, and lettered and ınted several signboards. In the summer of 1923 the lettering for e inscriptions to be placed on the outside of the building was done the shop painter after the architect's design, and later the in- riptions were cut by outside contract. By outside contract, also, eatherproof shades were put outside the north and south corridor ındows.

To the general equipment have been added during the year a mim- graph, a stereopticon lantern, and several pieces of office furniture.

The Freer Gallery is gratefully indebted to the Fish Commission r the gift of goldfish for the fountain, to the Zoological Park for e loan of three peafowl, and to the Department of Agriculture for vice as to the care of the box trees and rhododendrons in the court d for constant oversight of them.

ATTENDANCE

The gallery has been open every day, with the exception of Mo day, from 9 o'clock until 4.30, and with the exception, also, of fo days when it was closed by Executive order at the time of the de of President Harding. The total attendance for the year was 111,9 The aggregate Sunday attendance was 28,925, making an aver of 546; the week-day attendance amounted to 83,017, with an av age of 324. Of these visitors, 482 came to work in the study roo or to examine objects not on exhibition; 70 to make a study of t building, storage facilities, lighting, wall-coloring, etc.; 10 to ma copies or studies from objects in the collection, and 35 brou objects in their possession for examination and information.

On February 7, 8, and 9 the auditorium of the Freer Gallery w placed at the disposal of the Library of Congress for the presen tion of three recitals of chamber music. These concerts were t gift to the Library of Mrs. Frederic Shurtleff Coolidge, to acc pany her gifts of the manuscripts of 13 modern compositions to music division. Seven of these were performed.

On April 29 Professor Paul Pelliot, of the Collège de France, g an illustrated lecture on "Chinese bronzes, jades, and sculptur The total attendance at the concerts was 1,080, and at the lect 202, making a grand total attendance for the gallery of 113,22

PERSONNEL

Miss Grace L. McKenney entered as an assistant on October 1923.

Miss Mildred M. Tytus worked as an assistant from Noven 12 to May 17.

Mrs. Rita W. Edwards was transferred from the office of co spondence and documents on February 16, and was regularly pointed to the position of stenographer on April 1.

Miss Chie Hirano, librarian of the department of Chinese Japanese art of the Boston Museum of Fine Arts, and Mr. K Wang, have worked on the cataloguing of Japanese and Chi books.

FIELD WORK

Since the activities of the expedition sent to China under joint auspices of this gallery and the Museum of Fine Arts,] ton, have been conveyed to you in detail from time to time thro the reports and correspondence of the field staff, I venture me to remind you now of the fruitful investigations carried on du the year at Hsin-chêng Hsien in Honan; at I Chou in Chihli the tombs of Han Wu Ti, Ho Chü-ping, and others in Shensi; a

erly, at Yü-ho Chên in Honan, where some burials of the Han asty have been thoroughly investigated with gratifying results. important as the archeological work of our expedition has been, are more to be congratulated, perhaps, on our success in estab- ng between ourselves and the Chinese authorities a cooperative ement with regard to archeological investigation which has confirmed by the unsolicited appointment of Mr. Bishop as orary Adviser in Archeology to the Historical Department of Chinese Government. An arrangement of this sort was conceived ne fundamental object of our expedition, and its accomplishment ks the first definite effort of the kind to bring Chinese archeolo- s and officials together in a mutually beneficial and dignified tionship with western archeologists and museums, thus pro- ng in some measure, at least, a working basis on which a more ghtened scholarship may flourish and gradually supplant, let ope, the ruthless and unscientific collecting of Chinese antiq- s on a commercial scale which has hitherto been allowed and encouraged to furnish so much of the material available for ents in this vast and increasingly important field.

r. Bishop's detailed account of his field activities accompanies report as Appendix B (not printed).

espectfully submitted.

J. E. LODGE, *Curator.*

r. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 4

REPORT ON THE BUREAU OF AMERICAN ETHNOLOGY

SIR: I have the honor to submit the following report on the researches, office work, and other operations of the Bureau of American Ethnology during the fiscal year ending June 30, 1924. These were conducted in accordance with the act of Congress approved June 12, 1923, which contains the following item:

American ethnology: For continuing ethnological researches among the American Indians and the natives of Hawaii, including the excavation and preservation of archeologic remains, under the direction of the Smithsonian Institution, including the necessary employees and the purchase of necessary books and periodicals, $44,000.

The Bureau of American Ethnology was founded by Maj. J. W. Powell and placed under the direction of the Secretary of the Smithsonian Institution by act of Congress. This bureau is devoted to the increase of knowledge of the American Indian, as well as of the natives of Hawaii and the aborigines of Porto Rico. It follows the ideal of the Smithsonian Institution as applied to researches on the American Indians, including all branches of their archeology and ethnology. The bureau publishes annual reports and bulletins, the whole number of these thus far published being 40 reports and 81 bulletins. The former assume the form of memoirs, often large and highly technical; the latter are generally smaller in size, often preliminary in character.

The fundamental idea which led to this appropriation was the recognized necessity for reliable information for a proper appreciation of the Indian, as an aid to legislation. Very extravagant and diametrically opposite opinions were rife regarding the character of our aborigines. In the early days of contact of the European and Indian races erroneous romantic ideas were largely prevalent, but with the application of the science of anthropology new values of Indian character developed. The Indian in some quarters was regarded solely as an object of research; the humanitarian side was lost sight of, and the fact that he is a man belonging to one of the most important races in the ultimate amalgamation of the different peoples was overlooked. The aim of the Bureau of American Ethnology is to discover and to disseminate correct ideas of the Indian as a race, that our people may better understand and

eciate his history, language, sociology, music, religion, and
ous arts and industries. It is obligatory for the bureau to pre-
accurate records of customs indigenous to America that are
lly being lost in the settlement of the former homes of the
ans by members of the white race. The value of this material
increase in coming years, for the records that are now being
are final and in many cases will be the sole objective informa-
that posterity will have of the Indian and his customs. This
is imperative, for within the past few decades a great deal of
mation of this kind has disappeared unrecorded, and the prob-
ty is that this generation will witness the death of most aborigi-
urvivals in culture.

hile the ideal of the bureau is the acquisition of knowledge and
ublication of the same through reports, there has grown up a
deal of work on related subjects that absorbs more or less of
ime of the chief and his staff. Information is sought from all
ers regarding the Indians, and urgent calls from State insti-
ns and universities asking for advice and help in local prob-
have been more numerous than at any other time in the his-
of the institution. Routine office work has assumed in the past
ears a larger relative proportion than in former decades. Va-
agencies have quickened interest in the problems considered
e Bureau of American Ethnology. The great increase in travel
ting from the development of the automobile and the founda-
of national parks has intensified the desire to "see America
' Our parks and Indian reservations have been visited in the
few years by an ever increasing number of travelers. This has
lated a demand on the part of the general public for accurate
mation on the history and customs of the Indians, which the
u endeavors to supply.

an not be expected, when the office work has grown to such mag-
le and the appropriations have remained practically the same
ey were before the war, that the quantity of research in the field
qual that of former years, but the chief has endeavored to have
ny of the staff in the field as he can and to publish the reports
eir work as rapidly as feasible. It is self-evident that the
sition of knowledge regarding the Indians, even if not pub-
l, is a most valuable asset, notwithstanding the fact that it must
ored in the archives to await a more favorable time for pub-
on.

e first duty of the chief being administrative and his time
large part of the year being occupied with routine matters,
es not have much opportunity for field work, but notwithstand-

ing this fact scientific work of a limited nature has been done by him in the field. He has kept en rapport with the work of all archeological expeditions in the Southwest in order to be able to advise you in regard to your recommendations for archeological work on the public domain. The number of expeditions in the Southwest has tripled or quadrupled in the last decade.

The field work engaged in by the chief during the past year was archeological in nature, in cooperation with Mr. E. M. Elliott and his associates, of St. Petersburg, Fla. There are few areas in the United States which promise more to the archeologist than southwestern Florida along the shore from Tampa Bay to Cape Sable. Perhaps no one has added more to our knowledge of this area than Mr. F. H. Cushing, a former ethnologist of the bureau. The problems of southern Florida demand more objective material than we have from the Everglades and the Ten Thousand Islands, where numerous proofs of a vanished population are in evidence in the form of enormous shell heaps and earth mounds.

The chief began his researches on Weeden Island, near St. Petersburg, which is situated at the end of Gandy Bridge, an artificial causeway crossing Tampa Bay. The evidences of prehistoric aboriginal life on Weeden Island are numerous large shell heaps and sand heaps which may be divided into groups or types, as kitchen middens, observatories, foundations of houses, and burial places. Evidently there was formerly a large village near the highest point of the island. One of the mounds which was chosen for excavation turned out to be a cemetery, and in the course of the winter about one-half of it was excavated. The work extended from November until March, inclusive.

The chief was not able to be in St. Petersburg the whole winter, but after having started the work in November, 1923, he returned to Washington, assigning the direction of the excavations to Mr. Stanley Hedberg and later to Mr. M. W. Stirling, of the National Museum, who continued the work until the chief's return in February. As a result of the excavation a large collection of aboriginal objects was brought to the United States National Museum. This collection contains many unique specimens and will later be permanently installed in the Museum upon completion of a report on it. No specimens had formerly been excavated at Weeden Island and the unique results of this work are regarded as most important. A preliminary report has been published in the Smithsonian Miscellaneous Collections, vol. 76, No. 13.

At the present time it is too early to draw final conclusions from the above work, but it is intended to continue excavations in Florida in the winter of 1924. Many of the specimens found were not very

ifferent from those characteristic of the west coast of Florida, but ne number of objects is greater and their variations so extensive nat they are thought to indicate a high development of the aboiginal culture in southern Florida. Evidences of two distinct ultures, one above the other, were determined from the excavaons in the Weeden mound. The lower contained crude pottery, ery few implements, mostly of shell, all having a considerable likeess to the so-called archaic Antillean culture of Cuba. The upper ayer contained very fine specimens of decorated pottery in great umbers, showing close relationship to the ceramics of Georgia. 'his indicates an extension southward or a drift of population, ossibly allied to the Muskhogean, into the peninsula. The relaionship of the people of the lower layer was Antillean rather than Muskhogean. The inhabitants of southern Florida, when the earliest urials were made in the Weeden mound, probably belonged to an nknown tribe. The artifacts in the upper layer may be remains f the Caloosa tribe, which was found there when Tampa Bay was isited by Ponce de Leon. The Indians that now inhabit the Everlades—the Seminoles—are a late introduction into Florida and of Creek descent. The numerous Florida shell heaps antedated their dvent by several centuries.

The chief has actively worked during the past year for the formaion of a new national monument on the Little Colorado, near Flagtaff, Ariz. This monument has been temporarily named the Wupaki National Monument and includes ruins at the Black Falls of he Little Colorado, first described by him in 1900. It is to be ioped that before another report this most interesting group of tone buildings will be added to the other archeological monuments. The ruins that comprise it have some of the best preserved walls n the Southwest.

The impression exists in some quarters that the work of the Bureau of American Ethnology must be completed in a certain lefinite time. This impression has no real foundation, for ethnology is like any other scientific study and has no limitations. Every new year of work in the bureau enlarges the horizon of research and presents new problems regarding the American Indians for solution. Since the foundation of the bureau by the late Maj. J. W. Powell the aims and tendencies of the science of ethnology have greatly enlarged, and the published studies of the staff have put the science of anthropology upon such a firm foundation that not only the past appropriations but also the prospective expenditures by Congress are more than justified. The earlier work covered a limited scope; it pointed out the field for future work. It now remains for the comparative ethnologist to connect the various problems of man and his culture and to shed new light on what still remains unsolved.

By law the ethnological research of the staff of the bureau is limited to the American Indians and the aborigines of Hawaii. The logical outcome is the enlargement of the Bureau of American Ethnology into a bureau devoted to the study of all races.

Even in studying the Indians there are great regions of South America which are practically unknown to the ethnologist. South America, next to Central America, contains examples of probably the highest culture that has ever been attained by the American race. I refer, of course, to the civilization of the great empire of the Incas, extending from the Isthmus of Panama to southern Chile. In this prolific field the bureau has done comparatively little, and the time is now ripe for an extensive exploration in that field. No less important in South America is the area inhabited by wild tribes, such as the Matto Grosso and other regions east of the mountains. The remarkable similarity of the culture of the Indians in Argentina and that of the pueblos especially pleads for more thorough investigation of the former area. The great valley of the Amazon, that has attracted the ethnologist since the wonderful voyage of Alex. Von Humboldt at the beginning of the last century, still holds out new problems.

The bureau will soon issue a remarkably complete work by Dr. Walter E. Roth on British Guiana, which probably will be one of the finest it has ever published. It adds much to our knowledge, but no more important fact than the magnitude of the numerous fields remaining to be investigated in northern South America. The languages, sociology, religion, arts, history, and archeology of almost every country in South America demand research. Here we have a great continent awaiting the student of the antiquity and cultural relationship of the American race.

In the same way the field of Central America and Mexico now awaits the investigator, although in that particular area the bureau has made some very important contributions.

There remain special problems of secondary nature throughout the continent that are as yet unanswered which would be within the scope of the bureau's work. All ethnological work on the South American Indians should have very great influence in uniting more firmly the republics of Spanish origin and the United States.

Of the many problems awaiting investigation, one of the more important is the plotting of the trails by which communication was carried on between Indian tribes. These trails historically followed by roads and railroads now serve the growing habit of the automobile and the desire of Americans to see their own country. A study of the foods used by the Indians has a practical value which can not

be overestimated. The number of plants used by the Indians far outnumbers those on our own table, and the bureau might well give attention to the discovery of new food resources.

It is desirable to increase the archeological work of the bureau which thus far has attracted a great deal of attention and which is one of the foremost departments of anthropological study. This study should be extended to Florida and the coast States with a view to determining the relationship of the antiquities of North and Central America. The investigation of the southwestern portion of Texas and the adjoining State of New Mexico should be exploited, especially the contents of the new national monument near Carlsbad which contains important archeological material. One important problem is to follow the extension northward of the Huaxtec culture along the shores of Tamaulipas and Texas to our southern mound builders.

During the fiscal year Dr. John R. Swanton, ethnologist, completed the translations of stories from his Koasati, Alabama, Hitchiti, Natchez, and Creek texts, and added to them the stories obtained only in English and those in the Tuggle collection; he provided these stories with footnotes referring to similar tales among other tribes, and prepared an introduction for the whole. In addition to this work he has edited and largely recast a manuscript on Indian trails by the late Mr. W. E. Myer. Also, with the assistance of Miss Atkins, he has begun incorporating into an alphabetical card index all words in the Timucua language contained in the religious works of the Franciscan missionaries Pareja and Movilla—nearly all that is left to us of this old Florida tongue. Nearly one-third of the work has been completed.

On the 1st of July, 1923, Dr. Truman Michelson, ethnologist, was on board the *Sagona* en route to Labrador. He reached the Northwest River on July 4, where he found a few Nascapi Indians, one from Davis Inlet, besides the ordinary Montagnais Indians of the vicinity. From his work among these Indians it follows that the language of the Nascapi and Davis Inlet Indians is the same, and that instead of being a wholly distinct language it is nothing but a Montagnais dialect. Furthermore, it is abundantly clear that the dialects of the above-named Indians form a distinct unit as compared to the Montagnais dialects of Lake St. John and Lake Mistassini, as well as the so-called "Cree" of Rupert's House and the East Main River, which really are not Cree at all but Montagnais dialects. The report of some Indians to the west of the Nascapi speaking a language unintelligible to them is worth investigating at a later date. It may be noted that the folklore of the Indians of Labrador contains more elements occurring among Central Algonquians than

has been suspected. The very simple social organization of the Labrador Indians makes it very probable that the rather complex organizations of the Central Algonquians are unoriginal and are due both directly and indirectly to the influence of non-Algonquian tribes. He was able to measure only a few of the Indians at the Northwest River, so it is not possible to state precisely which physical type they represent.

At the conclusion of his work he returned to Rigolet and left on July 22 for St. Johns, Newfoundland. En route he was able to take the measurements of a few Eskimos. On his arrival at St. Johns he proceeded by steamer and train for Tama, Iowa, to renew his researches among the Fox Indians. He devoted especial attention to the ceremonial runners of these Indians, and in the course of the winter submitted a manuscript on them for publication by the bureau. Further, a number of Fox texts were translated and other ethnological data obtained. Doctor Michelson returned to Washington near the close of September. He made another trip among the Foxes in May and returned to Washington toward the end of June. During this trip he obtained new data on Fox ceremonials.

By joint arrangement with the Museum of the American Indian, Heye Foundation, the bureau undertook in the summer of 1923 the excavation of the Burton Mound at Santa Barbara, Calif., which was the chief village of the Santa Barbara Indians and without question the most important archeological site on the southern California coast. Mr. J. P. Harrington, ethnologist of the bureau, was detailed to take charge of the exploration of the mound and the work was commenced early in May, 1923, and continued throughout the summer and fall. The first day's work revealed the location of the cemetery, just where old Indians had stated that it was situated. During several months of careful stratigraphical excavation many facts of interest for the prehistory of the Santa Barbara Indians and the early culture of the Pacific coast in general were recorded.

The principal rancheria or village of the ancient Santa Barbara Valley was not at the mission, where the Indians were later gathered, but at the beach. It was situated just west of the mouth of Mission Creek, where a landing cove for canoes and two low mounds, one by the beach and a larger one 650 feet inland and now known as the Burton Mound, afforded unusual attraction as a dwelling place for Indians. At a number of places in the locality were sulphur springs; also springs of good drinking water. The name of the village was Syujtun, meaning "where the trail splits." There a thriving population of some 500 Indians lived on the wild food products of the neighboring shore and sea and of the Santa Barbara Valley, rich in acorn-bearing oaks and game animals.

The inhabitants of Syujtun remained unmolested until the establishment of the Santa Barbara Mission in 1786. After this the native villagers were gradually removed to the adobe cuarteles of the mission, 2 miles distant, and the desolated beach was known as "el puerto de Santa Bárbara" or as "el rancho de la playa." After the confiscation of the mission lands the ownership of the beach ranch passed into private hands. During the forties the owner was none other than Capt. George C. Nidever, known in California history as the rescuer of the last surviving Indian woman from San Nicolas Island. Captain Nidever sold the property in 1851 to Augustus F. Hinchman, whose daughter, Miss Stella F. Hinchman, has furnished valuable data about the history and traditions of the mound. In 1860 Mr. Hinchman sold the tract in turn to Lewis T. Burton, who made it his home for 19 years and after whom the mound has been called in more recent times. None of the early owners had allowed excavation on the property and with erection of the Potter Hotel on top of the mound in 1901 all hope of archeological investigation was lost. This hotel burned to the ground on April 19, 1921, and the old village site was thereby again released for archeological investigation.

The results of this excavation of the Indian town of Santa Barbara proved rich and interesting beyond expectation. The graves that were opened were crowded with human bodies, trinkets, and a great variety of utensils. Among the rarest specimens are the largest soapstone canoe ever discovered in California, a wooden awl such as is described by the early historians, and a number of objects of problematical use. There are soapstone pipes, fishhooks of abalone and bone, sinker stones, arrowheads of great variety, spearheads, about 140 fine mortars, pestles, including some very long ones, beads of many kinds, pendants, daggers, bowls and kettles of soapstone, including some of the largest ever found, native paints, etc. About 300 skeletons were taken out, among them some very ancient skeletons from the coquina or reef-rock layer. These are now in the hands of Dr. Bruno Oetteking, of the Museum of the American Indian, who is preparing an elaborate report on them.

At the close of January, Mr. Harrington returned to Washington and has since then been engaged in the preparation of his report on the Burton Mound.

Mr. J. N. B. Hewitt, ethnologist, was engaged for the greater part of the year in office work. This consisted chiefly in the historical analysis of the large mass of material in native text relating to the formation and structure and import of the League or Confederation of the Five Iroquois Tribes or Nations. He was also occupied in the translation of the farewell address of Degana-

wida, a founder of the confederation, into literary English. In this address Deganawida briefly summarizes the scope and import of the institutions and the laws of the league; herein, with the masterful hand of a prophet-statesman, he also graphically recapitulated the work accomplished by the several co-working founders.

Mr. Hewitt also translated from the Onondaga text the laws first recognizing the extant institution of chieftainess in uterine kindreds and then adopting it for the purpose of making it fundamental among the institutions of the League of the Iroquois, the laws defining the duties, rights, and obligations of the incumbent of such office and carefully prescribing the method by which a woman should be nominated by the mothers of her own uterine kindred, the method by which the choice should be confirmed, first by her own, and then by sister, and then by cousin clans, and then finally how this candidate should be installed at a federal council of condolence and installation. These laws also prescribe the method by which such chieftainess can, for cause, be deposed and a successor nominated and installed as prescribed by these laws; and they also prescribe the method of nominating and installing the male aid to the chieftainess, who must be a warrior and an orator to fulfill his adjuvant duties.

As a member of the United States Geographic Board, representing thereon the Bureau of American Ethnology, Smithsonian Institution, Mr. Hewitt has attended all regular and special meetings of the board with a single exception. As custodian of manuscripts of the Bureau of American Ethnology Mr. Hewitt reports that more than 250 items were withdrawn and consulted by the various collaborators of the bureau and by other students.

In past years, in studying the social and political institutions of the Iroquoian peoples, especially of the Five (latterly Six) Nations or Tribes, Mr. Hewitt has spent a number of field seasons in carefully collecting and recording in native texts from the best available leaders, chieftains, chieftainesses, ritualists, and ceremonialists, chiefly in the Mohawk, Onondaga, and Cayuga dialects, extensive material and data concerning the principles, the laws, decrees and ordinances of the instituting councils, the set rituals, the prescribed chants, and the ceremonial addresses, which together defined the functioning apparatus of the great commonwealth, commonly called the League or Confederation of the Iroquois. Mr. Hewitt has undertaken to subject, so far as possible, this text material to a careful literary and historical analysis and also to a thorough grammatic and lexic criticism, in order to restore as far as the evidence thus secured will warrant, these rituals and chants and set addresses to the earlier forms which were probably used when the League of the

Iroquois was instituted in the closing decades of the sixteenth century. This work is necessarily tedious and slow but is of supreme necessity. The results thus far are highly gratifying.

In June, 1924, Mr. Hewitt visited the Six Nations of Iroquois dwelling near Brantford, Ontario, Canada; the Onondaga dwelling near Syracuse, N. Y.; the Tonawanda dwelling near Akron, N. Y.; the Tuscarora dwelling near Sanborn, N. Y. His object on this trip was to obtain a better knowledge of the music of the ritual chants of the Condolence and Installation Council. He also secured a quantity of purple wampum which is used in these league rituals and which has now become so scarce that its cost is well-nigh prohibitive.

Mr. Hewitt was also able to secure from the very few persons who still retain some definite knowledge of the principles and institutions of the league additional interpretative and confirmatory information concerning certain critical passages in the native texts which he recorded in former field trips.

Mr. Francis La Flesche, ethnologist, gave most of his time to the assembling of his notes on the child-naming rites and ceremonies of the Osage Indians. These ancient rites, with their ceremonies, are now practically obsolete, and it was fortunate that Mr. La Flesche succeeded in securing two of the remaining versions. The first was obtained from Wa-xthi'-zhi, a member of the I^{n}-gtho$^{n'}$-ga or Puma gens. This version will form the first part of the volume on this subject.

The other version is that used by the Tsi'-zhu Wa-shta-ge, Peacemaker, gens. It was with considerable difficulty obtained from old Sho$^{n'}$-ge-mo^{n}-i^{n}, a member of the gens, who was very conservative and opposed to having any of the tribal rites go to strangers. Since the recording of these ancient rites that had been transmitted through many generations, both these No$^{n'}$-ho^{n}-zhi^{n}-ga, Wa-xthi'-zhi and Sho$^{n'}$-ge-mo^{n}-i^{n}, have died, and it is now doubtful if any member of the tribe could be found who is able to recite the rituals and go through the ceremonial forms in their entirety.

Tsi'-zhu Wa-shta-ge version will form the second part of the volume, now nearing completion, which is to be called "Osage Child Naming Rites."

Mr. W. E. Myer, special archeologist, on his return from field work in Tennessee, took up the preparation of his report on the remains of the great prehistoric Indian settlement known as the Great Mound Group in Cheatham County, Tenn., a preliminary account of which was given in last year's report. This town is situated on the Harpeth River near Kingston Springs and is found in two clusters about a mile apart in the bend of the Harpeth River, covering about 500

acres. The fortification of the Great Mound Group was one of the finest prehistoric structures for defense made by the Indians of Tennessee.

Nearly all the lower river bend, called the "Mound Bottom" by the local people, contains evidences of walls, many of which have disappeared by long cultivation of the soil. Mr. Myer was not able to determine the age of these mounds, but buildings which they represent were undoubtedly destroyed before the coming of the white people.

One of the most interesting results of the summer's work was the excavation of a small mound on the Denny farm at Goodlettsville, Sumner County, Tenn., the relics from this mound showing that the inhabitants of this site belonged to a culture quite unlike that of much of the surrounding region in the valley of the Cumberland.

Mr. Myer also made studies in the southern part of Tennessee in Lincoln and Moore Counties and made a map of a hitherto undescribed mound group on Elk River.

SPECIAL RESEARCHES

During the summer of 1923 Miss Frances Densmore visited the Makah Indians at Neah Bay, Wash., and recorded their songs. Neah Bay is near the end of Cape Flattery, but the coast is so mountainous that it is reached only by boat. At the time of Miss Densmore's visit there was only one passenger boat a week to this village. The principal industry of the Indians is salmon fishing. The purpose of this trip was to observe the music of Indians who live beside the ocean and to compare the music with that of tribes living on the mountains, plains, and desert. As a result of the comparison it was found that the music of the Makah resembles that of the Ute, Papago, and Yuma more than it resembles that of the Chippewa, Sioux, and Pawnee. This is general observation, the detailed comparison being unfinished. Three instances are as follows: (1) The Makah Indians use a "high drone," or sustained tone held by two or three women's voices, while the others sing the melody. This was heard among the Papago in southern Arizona and is found in certain parts of Asia. This suggests a cultural evidence that the Indians migrated from Asia and down the Pacific coast, the use of the drone being more pronounced among the Makah than among the Papago; (2) the Makah Indians have a considerable number of "non-harmonic" songs to which the term "key" can not properly be applied. These were found in southern Arizona but not in the plains region; (3) the Makah songs concerning the whale are marked by a very small compass and small intervals. The Ute songs concerning the

bear are also characterized by small intervals, but the compass is not particularly small. The Makah songs recorded were of several classes, including songs of the whale legends and whaling expeditions, songs of the potlatch and various social dances, songs connected with contests of physical strength, "gratitude songs," which were sung by individuals at feasts, lullabies for children, courting songs, and the songs of wedding festivities.

Dances and gatherings of the tribe were attended; numerous specimens illustrating the culture of the people were collected; the singers and environment were photographed; and about 30 specimens of plants were collected, with a description of their economic uses.

While in Washington, D. C., Miss Densmore arranged in a catalogue list 368 songs awaiting publication, and arranged in the proper order for publication all her material on Pawnee, Papago, Yuma, Cocopa, and Mohave music. Four manuscripts were submitted during the year, with the titles "Cocopa and Mohave Dance Songs," "Dance Songs and Flute Music of the Yuma," "Whaling Songs, Dream Songs, and Legend Songs of the Makah," and "Potlatch Songs of the Makah." These comprised, in addition to the text, 87 songs, with phonograph records, musical transcriptions, and analyses.

EDITORIAL WORK AND PUBLICATIONS

The editing of the publications of the bureau was continued through the year by Mr. Stanley Searles, editor, assisted by Mrs. Frances S. Nichols, editorial assistant. The status of the publications is presented in the following summary:

PUBLICATIONS ISSUED

Bulletin 79. Blood Revenge, War, and Victory Feasts Among the Jibaro Indians of Eastern Ecuador (Karsten). viii, 94 pp., 10 pls.

Bulletin 80. Mandan and Hidatsa Music (Densmore). xx, 192 pp., 19 pls., 6 figs.

Bulletin 81. Excavations in the Chama Valley, New Mexico (Jeancon). ix, 80 pp., 65 pls., 38 figs.

List of publications of the Bureau of American Ethnology. 45 pp.

PUBLICATIONS IN PRESS OR IN PREPARATION

Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians (Roth).

Thirty-ninth Annual Report. Accompanying paper: The Osage Tribe: The Rite of Vigil (La Flesche).

Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox In-

dian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society Known as "Those Who Worship the Little Spotted Buffalo": the Traditional Origin of the Fox Society Known as "The Singing Around Rite" (Michelson).

Forty-first Annual Report. Accompanying paper: Salish Basketry (Boas).

Forty-second Annual Report. Accompanying paper: Social Organization and Social Usages of the Indians of the Creek Confederacy (Swanton).

Bulletin 78. Handbook of the Indians of California (Kroeber).

Bulletin 82. Two Prehistoric Villages in Middle Tennessee (Myer).

DISTRIBUTION OF PUBLICATIONS

The distribution of publications has been continued under the immediate charge of Miss Helen Munroe, assisted by Miss Emma B. Powers. Publications were distributed as follows:

Report volumes and separates	2,058
Bulletins and separates	11,384
Contributions to North American ethnology	10
Miscellaneous publications	511
	13,963

As compared with the fiscal year ending June 30, 1923, there was a decrease of 3,731 publications distributed, due to the fact that no report volumes were issued during the year, whereas two reports were published in the preceding fiscal year.

ILLUSTRATIONS

Mr. DeLancey Gill, illustrator, with the assistance of Mr. Albert E. Sweeney, continued the preparation of the illustrations of the bureau. A summary of this work follows:

Drawings for publications	138
Photographic prints retouched for engraving	85
Negatives prepared	372
Films developed and printed from field exposures (rolls)	24
Photographic prints for distribution and office use	733

The work of reclassification of negatives has progressed satisfactorily. As a prelude to a new catalogue of the large collection of negatives, this work will be of lasting value. About 4,000 negatives were identified and rejacketed, but much yet remains to be done.

LIBRARY

The reference library continued under the immediate care of Miss Ella Leary, librarian, assisted by Mr. Thomas Blackwell.

During the year 560 books were accessioned. Of these 82 were acquired by purchase, 253 by gift and exchange, and 225 by binding of periodicals. The current periodicals annually received number about 975, of which 37 are by subscription, the remainder being

ved through exchange. The library has also received 225 pamts. The aggregate number of books in the library at the close ıe year was 25,621, of pamphlets about 15,325.

ıring the year many students not connected with the Smithın Institution have applied to the library for books. The library used also by the Library of Congress and officers of the executdepartments, and out of town students have made use of the ry through frequent loans.

ıditions of crowding on the book shelves are now acute in many es in the stacks. Many volumes received by the library not perng to anthropology were transferred to the library of the Smithın Institution.

COLLECTIONS

ıe following collections, purchased or acquired by members of bureau or by those detailed in connection with its researches, been transferred to the United States National Museum:

. Collection of about 90 specimens of picture pottery from the Mimbres Valley, N. Mex.
. Blanket on which is woven an elaborate representation of the Yeibichi dance of the Navaho Indians, presented to the bureau by Mr. Chee Dodge, St. Michael's, Ariz.
. Collection of archeological specimens made by the late John L. Baer during the summer of 1923 in the Susquehanna Valley region.
. California Mission Indian water basket collected by J. P. Harrington during the summer of 1922.
. Collection of archeological specimens secured in Tennessee and South Dakota by the late William E. Myer.
. Collection of archeological specimens from Pipe Shrine House in the Mesa Verde National Park, Colo.
. Collection of Indian implements and fossil animals found in Garrard County, Ky., along the Old Wilderness Trail, and presented to the bureau by Mrs. S. H. Burnside.
. Four prehistoric objects presented to the bureau, through the late W. E. Myer, by J. G. Braecklein.
. Three separate lots of stone implements from prehistoric village sites near Goodlettsville, Tenn., presented to the bureau through the late W. E. Myer, by a Mr. Meadow, John Bell Cartwright, and Capt. James Roscoe.
. Three lots of archeological specimens presented to the bureau, through the late W. E. Myer, by C. O. Chapman and A. B. Moore, Mrs. Lee Colin, and A. T. Sweet.
. Collection of archeological specimens from the Painted Kiva House, Mesa Verde National Park, Colo.

PROPERTY

rniture and office equipment were purchased to the amount of 9.

MISCELLANEOUS

The correspondence and other clerical work of the office has been conducted by Miss May S. Clark, clerk to the chief. Miss Julia S. Atkins, stenographer and typewriter, assisted the various members of the staff. Mr. Anthony W. Wilding, typist, has been engaged in copying manuscripts and in various duties connected with the office of the chief.

Mr. W. E. Myer, special archeologist, died December 2, 1923.

Respectfully submitted.

J. WALTER FEWKES, *Chief.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 5

REPORT ON THE INTERNATIONAL EXCHANGES

SIR: I have the honor to submit the report on the operations of the International Exchange Service for the fiscal year ended June 30, 1924.

Congress appropriated $43,000 for the support of the service during the year, $2,000 less than the previous appropriation. On the basis of the previous year's business this reduced amount would have been sufficient for the needs of the service. Toward the middle of the fiscal year, however, the exchanges had increased to such an extent that it was necessary to send shipments to foreign countries at less frequent intervals, in order to reduce the expense incurred for freight, so as to avoid a deficit. Near the close of the year it was found possible to return to the Institution's practice of making shipments to all foreign countries at intervals not exceeding a month. In addition to the above amount, Congress appropriated for the exchanges $200 for printing and binding. The repayments from departmental and various other establishments aggregated $5,202.24, making the total resources available for carrying on the system of exchanges during the year $48,402.24.

The total number of packages passing through the service during the year was 460,658, an increase over the number for the preceding year of 82,832. The weight of these packages was 567,107 pounds, an increase of 74,291. Much of this increase was due to the receipt of a large number of publications from establishments in the United States for transmission to the universities and colleges in Japan that lost their libraries during the recent earthquake.

The publications sent and received by the Exchange Service are classified under three heads: Parliamentary documents, departmental documents, and miscellaneous scientific and literary publications. The term "parliamentary documents," as here used, refers to publications set aside by act of Congress for exchange with foreign governments, and includes not only documents printed by order of either House of Congress, but also copies of each publication issued by any department, bureau, commission, or officer of the Government. Governments to which this class of publications are forwarded send to this country in exchange copies of their own official documents for deposit in the Library of Congress. The term "de-

partmental documents" embraces publications delivered at the Institution by the various governmental departments, bureaus, or commissions for distribution to their correspondents abroad. Publications received in return are deposited in the various departmental libraries. "Miscellaneous scientific and literary publications" are received chiefly from learned societies, universities, colleges, scientific institutions, and museums in the United States for transmission to similar establishments in all parts of the world.

The number and weight of the packages of different classes are indicated in the following table:

	Packages		Weight	
	Sent	Received	Sent	Received
			Pounds	*Pounds*
United States parliamentary documents sent abroad	176,290		83,517	
Publications received in return for parliamentary documents		4,867		9,745
United States departmental documents sent abroad	134,401		180,547	
Publications received in return for departmental documents		7,882		24,057
Miscellaneous scientific and literary publications sent abroad	107,034		195,295	
Miscellaneous scientific and literary publications received from abroad for distribution in the United States		30,184		73,966
	417,725	42,933	459,359	107,768
Grand total	460,658		567,107	

As mentioned in previous reports, the disparity between the number of publications transmitted abroad and those received in return is not as great as appears from the above figures. Packages sent abroad contain in many instances only a single publication, while those received in return often comprise several volumes. Furthermore, some foreign establishments send their publications directly to their destinations in this country by mail instead of through exchange channels.

During the year the State Department notified the Institution that the Government of Hungary had adhered to the two exchange conventions concluded at Brussels in 1886 and had established the Hungarian Libraries Board at Budapest to carry out the provisions of those conventions. The board was not fully established at the close of the year, but will be ready to assume its duties as the Hungarian Exchange Agency about October 1, 1924, when the agency in Budapest conducted by the Institution for many years will be discontinued. Dr. Julius Pikler, who has been the Smithsonian agent since July 1, 1906, has carried on the work to the entire satisfaction of the Institution, and I desire to express here appre-

ion of his faithful and efficient service during his connection with office.

he Institution was advised through diplomatic channels that the ernments of the Dominican Republic, Hungary, Latvia, and the e City of Danzig had adhered to the two exchange conventions luded at Brussels March 15, 1886.

oward the close of the fiscal year the librarian of the Storting ised the Institution that the Norwegian depository of United es official documents had been changed from the Stortingets liotek to the Universitets Bibliotek, Christiania.

he Japanese Association of the League of Nations submitted to country through the Embassy of Japan in Washington an ap- for books for replenishing the libraries of Japanese universities colleges which were destroyed by the earthquake. The associa- stated that that disaster wiped out huge collections of books any libraries, including the collection of 700,000 volumes in the ary of the Imperial University of Tokyo. The appeal was led by many American establishments and thousands of publica- s were forwarded to the Smithsonian Institution for transmis- to Japan through the International Exchange Service.

rom time to time some of the establishments that make use of exchange service in the distribution of their publications abroad to their announcements a word of appreciation. During the a number of such gratifying expressions have been received, icularly from the Argentine Republic, England, Germany, and country.

uring the year 2,464 boxes were used in forwarding exchanges to ign agencies for distribution, being an increase of 241 over the ber for the preceding 12 months. Of the total number of boxes abroad, 289 contained full sets of United States official docu- ts for foreign depositories, and 2,175 included departmental other publications for depositories of partial sets and for other espondents. In addition to the packages sent abroad in boxes, exchange service mailed directly to their destinations during the about 40,000 packages. While it is the practice of the service to exchanges by freight to foreign agencies for distribution, quite mber of packages are received for remote places which can not be reached through any of the agencies, and these packages are varded by mail. Furthermore, owing to the high ocean freight s it often happens that it is cheaper to mail packages to some ntries than to pack them in boxes and ship them by freight.

The number of boxes sent to each country is given in the following table:

Consignments of exchanges for foreign countries

Country	Number of boxes	Country	Number of boxes
Argentine Republic	44	Japan	288
Austria	55	Latvia	14
Belgium	65	Lithuania	9
Bolivia	2	Mexico	30
Brazil	34	Netherlands	65
British Colonies	3	New South Wales	29
Bulgaria	4	New Zealand	23
Canada	30	Norway	42
Chile	22	Peru	11
China	75	Poland	45
Colombia	16	Portugal	14
Costa Rica	9	Queensland	15
Cuba	5	Rumania	13
Czechoslovakia	64	Russia	73
Danzig	2	South Australia	18
Denmark	37	Spain	23
Egypt	7	Sweden	68
Esthonia	22	Switzerland	61
Finland	11	Tasmania	6
France	185	Union of South Africa	22
Germany	292	Uruguay	12
Great Britain and Ireland	332	Venezuela	10
Greece	11	Victoria	20
Hungary	47	Western Australia	6
India	50	Yugoslavia	15
Italy	92		
Jamaica	2		2,494

FOREIGN DEPOSITORIES OF UNITED STATES GOVERNMENTAL DOCUMENTS

In accordance with the terms of a convention concluded at Brussels March 15, 1886, and under authority granted by Congress in resolutions approved March 2, 1867, and March 2, 1901, 59 full sets of United States official documents and 38 partial sets are now sent through the Exchange Service regularly to depositories abroad. The Ministry of Finance, Government of Northern Ireland, Belfast; State Library, Reval, Esthonia: and the library of the League of Nations, located at Geneva, Switzerland, have lately been added to the list of those receiving full sets. The number of full and partial sets of governmental documents forwarded to foreign depositories is 97. The total number provided by law for this purpose and for the Library of Congress is 100.

The convention concluded at Brussels in 1886 provided for the international exchange of official documents and scientific and literary publications. That convention was ratified by the United States, Belgium, Brazil, Italy, Portugal, Serbia, Spain, and Switzerland.

Since the ratification of the Brussels convention a number of countries have adhered thereto. The names of the countries, together with the dates of their adherence, follow: Argentine Republic, 1889; Paraquay, 1889; Uruguay, 1889; Poland, 1920; Czechoslovakia, 1921; Rumania, 1923; Dominican Republic, 1923; Hungary, 1923; and Danzig, 1924.

In addition to the governments that have formally joined the convention, many countries exchange their official documents with the United States Government as will be noted from the lists given below:

DEPOSITORIES OF FULL SETS

ARGENTINE REPUBLIC: Ministerio de Relaciones Exteriores, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
BADEN: Universitäts-Bibliothek, Freiburg. (Depository of the State of Baden.)
BAVARIA: Staats-Bibliothek, Munich.
BELGIUM: Bibliothèque Royale, Brussels.
BRAZIL: Bibliotheca Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca de la Universidad Nacional de La Plata. (Depository of the Province of Buenos Aires.)
CANADA: Library of Parliament, Ottawa.
CHILE: Biblioteca del Congreso Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
COLOMBIA: Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA: Secretaría de Estado (Asuntos Generales y Canje Internacional), Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Kongelige Bibliotheket, Copenhagen.
ENGLAND: British Museum, London.
ESTHONIA: Riigiraamatukogu, Reval.
FRANCE: Bibliothèque Nationale, Paris.
GERMANY: Deutsche Reichstags-Bibliothek, Berlin.
GLASGOW: City Librarian, Mitchell Library, Glasgow.
GREECE: Bibliothèque Nationale, Athens.
HUNGARY: Hungarian House of Delegates, Budapest.
INDIA: Imperial Library, Calcutta.
IRISH FREE STATE: National Library of Ireland, Dublin.
ITALY: Biblioteca Nazionale Vittorio Emanuele, Rome.
JAPAN: Imperial Library of Japan, Tokyo.
LONDON: London School of Economics and Political Science. (Depository of the London County Council.)
MANITOBA: Provincial Library, Winnipeg.
MEXICO: Biblioteca Nacional, Mexico.
NETHERLANDS: Bibliotheek van de Tweede Kamer der Staten-Generaal, The Hague.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.

NORTHERN IRELAND: Ministry of Finance, Belfast.
NORWAY: Universitets-Bibliotek, Christiania. (Depository of the Government of Norway.)
ONTARIO: Legislative Library, Toronto.
PARIS: Préfecture de la Seine.
PERU: Biblioteca Nacional, Lima.
POLAND: Bibliothèque du Ministère des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca Nacional, Lisbon.
PRUSSIA: Preussische Staatsbibliothek, Berlin, N. W. 7.
QUEBEC: Library of the Legislature of the Province of Quebec, Quebec.
QUEENSLAND: Parliamentary Library, Brisbane.
RUSSIA: Shipments temporarily suspended.
SAXONY: Landesbibliothek. Dresden-N.
SOUTH AUSTRALIA: Parliamentary Library, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SWEDEN: Kungliga Biblioteket, Stockholm.
SWITZERLAND: Bibliothèque Centrale Fédérale, Berne.
SWITZERLAND: Library of the League of Nations, Palace of Nations, Quai de Leman, Geneva.
TASMANIA: Parliamentary Library, Hobart.
UNION OF SOUTH AFRICA: State Library, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
VENEZUELA: Biblioteca Nacional, Caracas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
WURTTEMBERG: Landesbibliothek, Stuttgart.
YUGOSLAVIA: Ministère des Affaires Etrangères, Belgrade.

DEPOSITORIES OF PARTIAL SETS

ALBERTA: Provincial Library, Edmonton.
ALSACE-LORRAINE: Bibliothèque Universitaire et Régionale de Strasbourg, Strasbourg.
BOLIVIA: Ministerio de Colonización y Agricultura, La Paz.
BRAZIL: Bibliotheca da Assemblea Legislativa do Estado do Rio de Janeiro Nictheroy.
BREMEN: Senatskommission für Reichs- und Auswärtige Angelegenheiten.
BRITISH COLUMBIA: Legislative Library, Victoria.
BRITISH GUIANA: Government Secretary's Office, Georgetown, Demerara.
BULGARIA: Ministère des Affaires Etrangères, Sofia.
CEYLON: Colonial Secretary's Office (Record Department of the Library), Colombo.
ECUADOR: Biblioteca Nacional, Quito.
EGYPT: Bibliothèque Khédiviale, Cairo.
FINLAND: Central Library of the State, Helsingfors.
GUATEMALA: Secretary of the Government, Guatemala.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port-au-Prince.
HAMBURG: Senatskommission für die Reichs- und Auswärtigen Angelegenheiten.
HESSE: Landesbibliothek, Darmstadt.
HONDURAS: Secretary of the Government, Tegucigalpa.
JAMAICA: Colonial Secretary, Kingston.
LATVIA: Ministry of Foreign Affairs, Riga.

LIBERIA: Department of State, Monrovia.
LOURENÇO MARQUEZ: Government Library, Lourenço Marquez.
LÜBECK: President of the Senate.
MADRAS, PROVINCE OF: Chief Secretary to the Government of Madras, Public Department, Madras.
MALTA: Minister for the Treasury, Valetta.
NEW BRUNSWICK: Legislative Library, Fredericton.
NEWFOUNDLAND: Colonial Secretary, St. John's.
NICARAGUA: Superintendente de Archivos Nacionales, Managua.
NOVA SCOTIA: Provincial Secretary of Nova Scotia, Halifax.
PANAMA: Secretaría de Relaciones Exteriores, Panama.
PARAGUAY: Oficina General de Inmigración, Asuncion.
PRINCE EDWARD ISLAND: Legislative Library, Charlottetown.
RUMANIA: Academia Romana, Bukharest.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SASKATCHEWAN: Government Library, Regina.
SIAM: Department of Foreign Affairs, Bangkok.
STRAITS SETTLEMENTS: Colonial Secretary, Singapore.
UNITED PROVINCES OF AGRA AND OUDH: Undersecretary to Government, Allahabad.
VIENNA: Bürgermeister-Amt der Stadt Wien.

INTERPARLIAMENTARY EXCHANGE OF OFFICIAL JOURNAL

The interparliamentary exchange is separate from the exchange of official documents above referred to and is carried on by the Smithsonian Institution in behalf of the United States Government in accordance with a resolution of Congress approved March 4, 1909. This resolution accords with the terms of the second convention concluded at Brussels March 15, 1886, to which the United States was one of the signatories, providing for the immediate exchange of the Official Journal.

During the year the immediate exchange has been entered into with Haiti, Latvia, and Norway. The names of the establishments to which the daily issue of the Congressional Record is mailed are given in the following list:

ARGENTINE REPUBLIC: Biblioteca del Congreso Nacional, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bibliothek des Nationalrates, Wien I.
BADEN: Universitäts-Bibliothek, Heidelberg.
BELGIUM: Bibliothèque de la Chambre des Représentants, Brussels.
BOLIVIA: Câmara de Diputados, Congreso Nacional, La Paz.
BRAZIL: Bibliotheca do Congresso Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca del Senado de la Provincia de Buenos Aires, La Plata.
CANADA:
Library of Parliament, Ottawa.
Clerk of the Senate, Houses of Parliament, Ottawa.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.

CUBA:
Biblioteca de la Cámara de Representantes, Habana.
Biblioteca del Senado, Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Rigsdagens Bureau, København.
ESTHONIA: Riigiraamatukogu, Reval.
FRANCE:
Bibliothèque de la Chambre des Députés, au Palais Bourbon, Paris.
Bibliothèque du Sénat, au Palais du Luxembourg, Paris.
GREAT BRITAIN: Library of the Foreign Office, Downing Street, London, S. W. 1.
GREECE: Library of Parliament, Athens.
GUATEMALA: Biblioteca de la Oficina Internacional Centro-Americana, 8a Calle Poniente No. 1, Ciudad de Guatemala.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port-au-Prince.
HONDURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
HUNGARY: Bibliothek des Abgeordnetenhauses, Budapest.
ITALY:
Biblioteca della Camera dei Deputati, Palazzo di Monte Citorio, Rome.
Biblioteca del Senato del Regno, Palazzo Madama, Rome.
LATVIA: Library of the Saeima, Riga.
LIBERIA: Department of State, Monrovia.
NEW SOUTH WALES: Library of Parliament, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Stortingets Bibliotek, Christiania.
PERU: Cámara de Diputados, Congreso Nacional, Lima.
POLAND: Monsieur le Ministre des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca do Congresso da Republica, Lisbon.
PRUSSIA: Bibliothek des Abgeordnetenhauses, Prinz-Albrechtstrasse 5, Berlin, S. W. 11.
QUEENSLAND: The Chief Secretary's Office, Brisbane.
RUMANIA: Bibliothèque de la Chambre des Députés, Bukharest.
SPAIN:
Biblioteca del Congreso de los Diputados, Madrid.
Biblioteca del Senado, Madrid.
SWITZERLAND:
Bibliothèque de l'Assemblée Fédérale Suisse, Berne.
Library of the League of Nations, Geneva.
TRANSVAAL: State Library, Pretoria.
UNION OF SOUTH AFRICA: Library of Parliament, Cape Town.
URUGUAY: Biblioteca de la Cámara de Representantes, Montevideo.
VENEZUELA: Cámara de Diputados, Congreso Nacional, Caracas.
WESTERN AUSTRALIA: Library of Parliament of Western Australia, Perth.
YUGOSLAVIA: Library of the Skupshtina, Belgrade.

It will be noted from the above list that there are at present 41 different foreign States or Provinces with which the immediate exchange of the Official Journal is carried on. To some of the countries two copies of the Congressional Record are forwarded, one to the upper, and one to the lower house of Parliament. The total number of the Records transmitted is 47. The number provided by law for this exchange is 100.

FOREIGN EXCHANGE AGENCIES

RIA, *via* France.
'LA, *via* Portugal.
NTINE REPUBLIC: Comisión Protectora de Bibliotecas Populares, Calle rdoba 931, Buenos Aires.
RIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
ES, *via* Portugal.
IUM: Service Belge des Échanges Internationaux, Rue des Longs-Chariots Brussels.
VIA: Oficina Nacional de Estadística, La Paz.
IL: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Rio de neiro.
ISH COLONIES: Crown Agents for the Colonies, London.
ISH GUIANA: Royal Agricultural and Commercial Society, Georgetown.
ISH HONDURAS: Colonial Secretary, Belize.
ARIA: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
ARY ISLANDS, *via* Spain.
.E: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
NA: American-Chinese Publication Exchange Department, Shanghai Bu-au of Foreign Affairs, Shanghai.
SEN: Government General, Keijo.
MBIA: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, gotá.
A RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San sé.
HOSLOVAKIA: Service Tchécoslovaque des Échanges Internationaux, Biblio-que de l'Assemblée Nationale, Prague 1–79.
IG: Stadtbibliothek, Danzig.
ARK: Kongelige Danske Videnskabernes Selskab, Copenhagen.
H GUIANA: Surinaamsche Koloniale Bibliotheek, Paramaribo.
DOR: Ministerio de Relaciones Exteriores, Quito.
T: Government Publications Office, Printing Department, Bulaq, Cairo.
ONIA: State Library, Reval.
AND: Delegation of the Scientific Societies of Finland, Helsingfors.
CE: Service Français des Échanges Internationaux, 110 Rue de Grenelle, ris.
ANY: Amerika-Institut, Universitätstrasse 8, Berlin, N. W. 7.
T BRITAIN AND IRELAND: Messrs. Wheldon & Wesley, 2, 3, and 4 Arthur St., W Oxford St., London, W. C. 2.
CE: Bibliothèque Nationale, Athens.
NLAND, *via* Denmark.
EMALA: Instituto Nacional de Varones, Guatemala.
I: Secrétaire d'Etat des Relations Extérieures, Port au Prince.
URAS: Biblioteca Nacional, Tegucigalpa.
GARY: Hungarian Libraries Board, Budapest.
ND, via Denmark.
A: Superintendent of Stationery, Bombay.
Y: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio manuele, Rome.
AICA: Institute of Jamaica, Kingston.
N: Imperial Library of Japan, Tokyo.
, *via* Netherlands.

LATVIA: Ministry of Foreign Affairs, Riga.
LIBERIA: Bureau of Exchanges, Department of State, Monrovia.
LITHUANIA: Sent by mail.
LOURENÇO MARQUEZ, *via* Portugal.
LUXEMBURG, *via* Belgium.
MADAGASCAR, *via* France.
MADEIRA, *via* Portugal.
MOZAMBIQUE, *via* Portugal..
NETHERLANDS: Bureau Scientifique Central Néerlandais, Bibliothèque de l'Académie Technique, Delft.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: Dominion Museum, Wellington.
NICARAGUA: Ministerio de Relaciones Exteriores, Managua.
NORWAY: Universitets-Bibliotek, Christiania.
PANAMA: Secretaría de Relaciones Exteriores, Panama.
PARAGUAY: Servicio de Canje Internacional de Publicaciones, Secciones Consular y de Comercio, Ministerio de Relaciones Exteriores, Asuncion.
PERU: Oficina de Reparto, Depósito y Canje Internacional de Publicaciones, Ministerio de Fomento, Lima.
POLAND: Bibliothèque du Ministère des Affaires Etrangères, Warsaw.
PORTUGAL: Secção de Trocas Internacionaes, Bibliotheca Nacional, Lisbon.
QUEENSLAND: Bureau of Exchanges of International Publications, Chief Secretary's Office, Brisbane.
RUMANIA: Institutul Meteorologic Central, Ministerul Agriculturei, Bukharest.
RUSSIA: Academy of Sciences, Leningrad.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SIAM: Department of Foreign Affairs, Bangkok.
SOUTH AUSTRALIA: Public Library of South Australia, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SUMATRA, *via* Netherlands.
SWEDEN: Kongliga Svenska Vetenskaps Akademien, Stockholm.
SWITZERLAND: Service Suisse des Échanges Internationaux, Bibliothèque Centrale Fédérale, Berne.
SYRIA: American University of Beirut.
TASMANIA: Secretary to the Premier, Hobart.
TRINIDAD: Royal Victoria Institute of Trinidad and Tobago, Port-of-Spain.
TUNIS, *via* France.
TURKEY: Robert College, Constantinople.
UNION OF SOUTH AFRICA: Government Printing Works, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
VENEZUELA: Biblioteca Nacional, Carácas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
YUGOSLAVIA: Académie Royale Serbe des Sciences et des Arts, Belgrade.

Respectfully submitted.

C. G. ABBOT,
Assistant Secretary,
In Charge of Library and Exchanges.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 6

REPORT ON THE NATIONAL ZOOLOGICAL PARK

SIR: I have the honor to submit the following report on the operations of the National Zoological Park for the fiscal year ending June 30, 1924:

The appropriation made by Congress for the regular maintenance of the park was the same as for the preceding year, $125,000. The bill providing for printing and binding, Smithsonian Institution, contained an additional allotment of $300 for the National Zoological Park.

The year has been one of the most successful in the history of the park, both as to care and maintenance of the buildings, grounds, and collections, and in service to the public. In addition to many minor improvements, a new restaurant building has been completed. This was in operation before the close of the year; and the cleanly, roomy, open refreshment room and sanitary serving quarters have been greatly appreciated by visitors. The collection is beyond doubt of far greater value and scientific interest than ever before, and has been kept in excellent condition, with low rate of loss. All previous attendance records have been broken, and a total of 2,442,880 visitors was recorded for the year.

ACCESSIONS

Gifts.—Altogether, 221 animals were presented to the park, or placed on indefinite deposit, during the year. A most notable accession was a fine young Baird's tapir, presented by Mr. M. G. Henery, of Puerto Castillo, Honduras, and obtained through the interest of Dr. Wm. M. Mann. Baird's tapir has always been one of the rarest animals in captivity and the only specimen ever before in the National Zoological Park was a young animal exhibited for a short time 24 years ago. Three species of tapirs are now living in the park, a most unusual record for any zoological garden. Mr. Henery is to be congratulated on his notable achievement in adding this unusual animal to the national collections.

Mr. Victor J. Evans, of Washington, D. C., who has taken a great interest in the National Zoological Park for many years, continued his contributions of carefully selected animals of the rarer and more

unusual varieties. Among the specimens received from him during the last year were such valuable species as the agile gibbon, gelada baboon, Tasmanian devil, crimson-winged paroquet, Australian catbird, and long-necked turtle. Altogether, Mr. Evans contributed 55 animals to the park during the year.

A most interesting collection from Brazil was brought to the park by Dr. W. L. Schurz, commercial attaché, United States Embassy, Rio de Janeiro. This collection included a fine South American bush dog (*Icticyon venaticus*), the first of its kind to be exhibited in the park. There were also an ocelot, capybara, coatimundi, and several birds. The bush dog is an exceedingly rare species in collections.

The Canadian Government, through Hon. J. B. Harkin, Commissioner of Dominion Parks, presented a male yak and two female Rocky Mountain sheep from Banff, Alberta; and the State Fish and Game Commission of Utah, through Hon. D. H. Madsen, contributed four beavers and a notable collection of wild ducks, including six different species.

The complete list of gifts for the year, from 77 individual donors, is as follows:

Mr. E. J. Abernethy, Connelly Springs, N. C., great horned owl.

Capt. Frank Vans Agnew, Peten, Guatemala, ocelot.

Hon. Henry D. Baker, Trinidad, British West Indies, 2 tree porcupines and 2 blue-and-yellow macaws.

Mr. H. S. Barber, Washington, D. C., copperhead.

Mrs. B. W. Barton, Baltimore, Md., cockateel.

Dr. Paul Bartsch, Washington, D. C., chuck-wills-widow and 2 Bahama rock iguanas.

Mr. Oscar E. Bayard, Orlando, Fla., 2 caracaras.

Mr. L. G. Beerbower, Terra Alta, W. Va., great blue heron.

Mr. John M. C. Betts, Takoma Park, Md., 2 alligators.

Mrs. W. O. Biggs, Washington, D. C., ocelot.

Mr. Albert A. Breeden, Manassas, Va., Virginia opossum.

Mrs. C. M. Buck, Washington, D. C., double yellow-head parrot.

Canadian Government, through Hon. J. B. Harkin, yak and 2 Rocky Mountain sheep.

Mrs. E. B. Chapman, Washington, D. C., mallard.

Mr. Austin H. Clark, Washington, D. C., canary.

Mr. G. W. Clarke, Washington, D. C., Cooper's hawk.

Mrs. J. L. Conn, Washington, D. C., orange-winged parrot.

Hon. Calvin Coolidge, White House, Washington, D. C., black bear and peafowl.

Mr. T. E. Counts, Manassas, Va., Virginia opossum.

Mrs. J. H. Cummings, Wilmington, N. C., coachwhip snake, corn snake, and 2 glass snakes.

Mr. Charles F. Denley, Glenmont, Md., 3 vulturine guinea fowls.

Mr. C. S. East, Washington, D. C., copperhead.

Mr. Joseph Edgal, Washington, D. C., 2 domestic rabbits.

Mr. Victor J. Evans, Washington, D. C., agile gibbon, gelada baboon, 2 Tasmanian devils, sulphur-crested cockatoo, Pennant's paroquet, crimson-

inged paroquet, 2 grass paroquets, severe macaw, 2 musk lorikeets, Australian catbird, shining starling, 2 red-faced Gouldian finches, black-faced Gouldian finch, 5 diamond finches, 3 zebra finches, 4 St. Helena waxbills, rosy-mped finch, 5 chestnut-breasted finches, 2 red-headed finches, 2 paradise hydahs, African wood hoopoe, Australian thick-knee, 2 crowned pigeons, long-ecked turtle, stump-tailed lizard, 2 blue-tongued lizards, 4 water dragons, and Australian skinks.

Mr. Edward S. Fuller, Washington, D. C., loon.

Mr. W. B. Gardner, Charleston, W. Va., banded rattlesnake.

Mr. F. W. Goding, Guayaquil, Ecuador, snowy egret.

Mr. C. W. Good, Washington, D. C., muskrat.

Mrs. George W. Harrington, Richmond, Va., patas monkey and white-roated capuchin.

Mrs. A. F. Hassan, Washington, D. C., horned toad.

Mr. T. M. Haston, Davenport, Fla., alligator.

Mr. M. G. Henery, Puerto Castillo, Honduras, Baird's tapir.

Mr. T. P. Lovering, Wilmington, N. C., copperhead and coachwhip snake.

Dr. M. W. Lyon, South Bend, Ind., Franklin's spermophile.

Hon. D. H. Madsen, State Fish and Game Commission, Salt Lake City, Utah, beavers, green-winged teal, shoveller, 2 redheads, 3 mallards, 8 baldpates, d 11 pintails.

Dr. Wm. M. Mann, Washington, D. C., Mexican spider monkey and 2 Honras squirrels.

Mr. D. W. May, Mayaguez, Porto Rico, 2 Jamaica red-tailed hawks.

Mr. F. H. McHaffie, Wevaco, W. Va., 2 banded rattlesnakes.

Mrs. F. M. McQuade, Washington, D. C., double yellow-head parrot.

Mr. Andrew Miller, Washington, D. C., red-crowned parrot.

Mr. C. E. Mirguet, Rochester, N. Y., banded rattlesnake and 2 blacksnakes.

Mrs. G. W. Morey, Chevy Chase, Md., red-tailed hawk.

Mr. Walter C. B. Morse, Washington, D. C., orange-winged parrot and aly parrot.

Mrs. W. P. Norfolk, Baltimore, Md., titi monkey.

Mr. Thos. J. Nutt, Somerville, Mass., green guenon.

Mr. Edward O'Connell, Washington, D. C., red fox.

Mr. W. L. O'Neil, Mount Ida, Va., 2 ring-necked pheasants.

Mr. J. Patten, Washington, D. C., woodchuck.

Mr. Jesse Pawling, Washington, D. C., cooter.

Mr. W. Robert Perkins, Washington, D. C., 2 alligators.

Mr. E. R. Picard, Wilmington, N. C., banded rattlesnake.

Mrs. H. E. Read, Washington, D. C., 2 tovi paroquets.

Maj. A. D. Rorex, Portsmouth, N. H., Santo Domingo parrot.

Mr. R. H. Sargent, Washington, D. C., 2 alligators.

Mr. E. S. Schmid, Washington, D. C., barred owl.

Dr. A. H. Schultz, Baltimore, Md., brown pelican.

Mr. W. L. Schurz, Rio de Janeiro, Brazil, bush dog, ocelot, capybara, gray timundi, red-billed toucan, red-and-blue-and-yellow macaw, and 3 blue-and-low macaws.

Mrs. W. F. Scruggs, Martinsburg, W. Va., Cuban parrot.

Mr. Asa A. Sheetz, Woodstock, Va., rough green snake.

Dr. R. W. Shufeldt and Mr. James S. Jester, Washington, D. C., 2 water akes and 2 garter snakes.

Mr. J. H. Smith, Washington, D. C., orange-winged parrot.

Messrs. Sneeden and Davis, Wilmington, N. C., king snake, chicken snake, blacksnake, and spreading adder.

Mrs. G. A. Somerville, Washington, D. C., bob white.

Mr. P. C. Standley and Dr. W. M. Mann, Washington, D. C., Allen's opossum, Panama agouti, 10 tovi paroquets, and loggerhead turtle.

Mrs. Robert B. Stiles, Petersburg, Va., white-throated capuchin.

Mrs. W. W. Stuart, Washington, D. C., white-throated capuchin.

Mr. Landon Thomas, Augusta, Ga., blue-and-yellow macaw.

Mr. J. E. Tyler, Washington, D. C., 3 alligators.

Mr. Allen W. Underwood, Washington, D. C., 2 ringed turtledoves.

Mr. Frank Upsham, Washington, D. C., alligator.

Mr. J. S. Warmbath, Washington, D. C., Virginia opossum and 2 great horned owls.

Mrs. Garret Watson, Washington, D. C., double yellow-headed parrot.

Mr. J. E. White, Snowden, N. C., whistling swan.

Mrs. Grace Wilkinson, Washington, D. C., Cuban parrot.

Mr. Charles M. Willoughby, Washington, D. C., 2 European foxes.

Mr. R. W. Wilson, Glen Echo, Md., California coyote.

Mr. E. F. Wood, Washington, D. C., red fox.

Births.—During the year 42 mammals were born and 27 birds were hatched in the park. These records, as in former reports, include only such as are reared to a reasonable age, no account being made in these published statistics of young that live only a few days. Mammals born include: Mexican puma, 2; lion, 2; dingo, 2; gray wolf, 6; Rocky Mountain sheep, 1; mouflon, 1; aoudad, 1; tahr, 2; American bison, 2; reindeer, 2; Japanese deer, 3; hog deer, 2; fallow deer, 2; red deer, 5; guanaco, 1; Trinidad agouti, 3; rhesus monkey, 1; Javan macaque, 1; red kangaroo, 1; rufous-bellied wallaby, 1; brush-tailed rock wallaby, 1. Birds hatched were of the following species: Blue goose, black duck, wood duck, Australian ibis, black-crowned night heron, and grass paroquet.

Twin monkeys were born for the first time in the records of the park, but one of the young lived only a few days. The species was *Macaca rhesus*. The breeding of the blue goose (*Chen cærulescens*) is a notable achievement, of which the keepers in the bird division may well be proud. The young of this bird have never before been reared, and only once before, so far as is known, has the species nested in captivity.

Exchanges.—A number of desirable animals were received in exchange for surplus stock. These included 12 mammals, 60 birds and 4 reptiles. Among the especially noteworthy accessions in this class are a young black rhinoceros and a leopard from Africa, 5 reindeer from Norway, and 2 San Geronimo harbor seals from Lower California. Birds received in exchange include a kiwi (*Apteryx mantelli*), which, with a number of other rare species, came from the Wellington, New Zealand, Zoological Gardens in exchange for some American animals. There were also received in exchange

trumpeter swan, a wedge-tailed eagle, and numbers of other water-
wl and cage birds.

Purchases.—Only 9 mammals, 81 birds, and 8 reptiles were pur-
ased during the year. Special mention should be made, however,
a pair of Alpine ibex, from Europe, 10 Marquesas Islands doves,
bleeding-heart doves, 12 white-cheeked geese, 2 pink-footed geese,
Massena quail, and a gannet. All of these unusual species are
oing well in the park.

Transfers.—The Biological Survey, United States Department of
griculture, transferred to the National Zoological Park a number
especially desirable animals taken by field agents of the bureau or
ized by United States game wardens in discharge of their duties.
f particular interest during the year were a black bear from Oregon,
pacas from Central America, a black-footed ferret from Nebraska,
white-cheeked geese from Alaska, 2 whistling and 2 mute swans.
ltogether, the Biological Survey contributed 7 mammals and 11
rds during the year.

Deposits.—Among the few animals received on deposit are two
arrots rarely shown in this country. These are the Philippine
ckatoo and the Philippine green parrot, both new to the records
the park.

SPECIES NEW TO THE COLLECTION

An unusual number of animals new to the park records were re-
ived during the year. A list of the 40 species thus exhibited for
e first time follows:

Allen's opossum—*Metachirops opossum fuscogriseus.*
California coyote—*Canis ochropus.*
European fox—*Vulpes vulpes.*
Bush dog—*Icticyon venaticus.*
San Geronimo harbor seal—*Phoca richardii geronimensis.*
Franklin's spermophile—*Citellus franklinii.*
Tree porcupine—*Coendou prehensilis.*
Gray titi monkey—*Callicebus gigot.*
Agile gibbon—*Hylobates lar.*
Alpine ibex—*Capra ibex.*
Black rhinoceros—*Diceros bicornis.*
White-cheeked goose—*Branta canadensis occidentalis.*
Pink-footed goose—*Anser brachyrhynchus.*
Jamaica redtail—*Buteo borealis jamaicensis.*
Vulturine guinea fowl—*Acryllium vulturinum.*
Pukeko—*Porphyrio stanleyi.*
Large-billed thick-knee—*Burhinus magnirostris.*
Philippine cockatoo—*Kakatoe hæmaturopygia.*
Crimson-winged parrot—*Aprosmictus erythropterus.*
Philippine green parrot—*Tanygnathus lucionensis.*
Musk lorikeet—*Glossopsitta concinna.*
Chuck-will's-widow—*Antrostomus carolinensis.*
Morepork owl—*Spiloglaux novæzeelandiæ.*

Red-billed toucan—*Ramphastos monilis.*
African wood hoopoe—*Irrisor erythrorhynchus.*
Red-eared bulbul—*Otocompsa jocosa.*
Mistle thrush—*Turdus viscivorus.*
Australian catbird—*Ailuræedus viridis.*
Rosy-rumped waxbill—*Estrilda rhodopyga.*
Red-headed finch—*Amadina erythrocephala.*
Yellow-tailed oriole—*Icterus mesomelas.*
Gray singing finch—*Serinus leucopygius.*
Leclancher's nonpareil—*Passerina leclancheri.*
Bahama rock iguana—*Cyclura rileyi.*
Water dragon—*Physignathus lesueurii.*
Australian skink—*Egerina cunninghamei.*
Western bull snake—*Pituophis catenifer.*
Beaded snake—*Drymobius margaritiferus.*
Mexican musk turtle—*Kinosternon sonoriense.*
Long-necked turtle—*Chelodina longicollis.*

REMOVALS

There were sent away in exchange to other zoological gardens during the year, 75 surplus animals, including 41 mammals, 31 birds, and 3 reptiles. Among these were the following mammals born and reared in the park: European brown bear, 3; raccoon, 4; llama, 1; tahr, 1; yak, 2; Japanese deer, 9; red kangaroo, 1; rufous-bellied wallaby, 3. In addition to these, 26 gray squirrels were sent to Quantico, Va., for stocking the United States Marine Corps reservation at that place, and 21 squirrels were sent to the military reservation at Fort Hayes, Columbus, Ohio.

A number of animals on deposit were returned to owners.

Although the death rate has been held at a normally low mark, there have been, as in all years, a few serious losses of animals. Some records of interest because of the long periods of life in the park are as follows: A sacred ibis (*Threskiornis æthiopicus*) received September 25, 1903, died October 20, 1923, after 20 years and 25 days in the collection. An East African leopard, female, which was presented to the park by Mr. W. N. McMillan, and arrived in Washington December 19, 1909, died 14 years and 4 days later on December 23, 1923. A boatbill heron (*Cochlearius cochlearius*) received September 28, 1910, died on December 11, 1923, after 13 years 2 months and 13 days in the park. A female Mexican agouti (*Dasyprocta mexicana*) received July 7, 1910, died August 28, 1923, having lived in the park for 13 years 1 month and 21 days. A female American elk (*Cervus canadensis*) born in the park on June 5, 1910, died August 10, 1923, at an age of 13 years 2 months and 5 days. A northern wild cat (*Lynx uinta*), male, received January 15, 1912, died 11 years 9 months and 13 days later, on October 28, 1923.

A male white stork (*Ciconia ciconia*) received August 12, 1912, died April 26, 1924, after 11 years 8 months and 5 days in the park. A female tayra (*Tayra barbara*) received September 8, 1914, died on March 20, 1924, from pericarditis, after a life of 9 years 6 months and 12 days in the collection.

Other serious losses by death during the year were a Malay sun bear, congestion of lungs, August 12, 1923; agile gibbon, pneumonia, January 11, 1924; orang-utan, late rickets, February 15, 1924; and a South American tapir, intussusception of small intestine, February 19, 1924.

Post-mortem examinations were made in most cases by the pathological division of the Bureau of Animal Industry; but five examinations were made by Dr. Adolph H. Schultz, of the Carnegie Institution, Laboratory of Embryology; and one was made at St. Elizabeths Hospital, Department of the Interior.

The following list shows the results of autopsies, the cases being arranged by groups:

CAUSES OF DEATH

MAMMALS

Marsupialia: Peritonitis, 1.

Carnivora: Pneumonia, 2; congestion of lungs, 2; enteritis, 1; gastroenteritis, 2; pericarditis, 1; no cause found, 1.

Rodentia: Pneumonia and pericarditis, 1; multiple tumors of lungs, 1; gastroenteritis, 1; roundworm infestation, 1.

Primates: Pneumonia, 1; congestion of lungs, 1; tuberculosis, 2; enteritis, 4; stenosis of intestine, 1; hepatitis, 1; late rickets, 1; no cause found, 2.

Artiodactyla: Gastritis, 1; anemia, 2.

Perissodactyla: Intussusception of small intestine, 1.

Edentata: Gastritis, 1.

BIRDS

Colymbiformes: Aspergillosis, 1.

Ciconiiformes: Diphtheria, 1; internal hemorrhage, 1; anemia, 1.

Anseriformes: Pneumonia, 1; tuberculosis, 1; aspergillosis, 2; colibacillosis, 1.

Galliformes: Colibacillosis, 2; intestinal sarcoma, 1.

Gruiformes: Tuberculosis, 1; enteritis, 2; no cause found, 1.

Charadriiformes: Enteritis, 2; no cause found, 1.

Cuculiformes: No cause found, 1.

Psittaciformes: General cachexia, 1; accident, 2.

Passeriformes: Tæniasis, 1; no cause found, 1.

All specimens of special scientific value needed by the United States National Museum were transferred after death to that institution. These included, during the year, 21 mammals, 50 birds, and 15 reptiles. A number of rare birds' eggs were also sent to the Museum.

Five mammals especially needed by the Carnegie Laboratory of Embryology, Johns Hopkins Medical School, Baltimore, were sent after death to that institution; and one mammal was sent to St. Elizabeths Hospital, Washington, D. C., for special study of the brain. A few skins of cage birds were saved for the reference collection at the park.

ANIMALS IN THE COLLECTION JUNE 30, 1924

MAMMALS

MARSUPIALIA

Allen's opossum (*Metachirops opossum fuscogriseus*)	1
Virginia opossum (*Didelphis virginiana*)	4
Tasmanian devil (*Sarcophilus harrisii*)	2
Australian opossum (*Trichosurus vulpecula*)	2
Flying phalanger (*Petaurus breviceps*)	7
Brush-tailed rock wallaby (*Petrogale penicillata*)	3
Rufous-bellied wallaby (*Macropus billardieri*)	5
Wallaroo (*Macropus robustus*)	2
Great gray kangaroo (*Macropus giganteus*)	2
Red kangaroo (*Macropus rufus*)	6
Wombat (*Phascolomys mitchelli*)	1

CARNIVORA

Kadiak bear (*Ursus middendorffi*)	2
Alaska Peninsula bear (*Ursus gyas*)	4
Yakutat bear (*Ursus dalli*)	1
Kidder's bear (*Ursus kidderi*)	2
European bear (*Ursus arctos*)	2
Grizzly bear (*Ursus horribilis*)	1
Apache grizzly (*Ursus apache*)	1
Himalayan bear (*Ursus thibetanus*)	1
Black bear (*Ursus americanus*)	3
Cinnamon bear (*Ursus americanus cinnamomum*)	2
Glacier bear (*Ursus emmonsii*)	1
Sloth bear (*Melursus ursinus*)	1
Polar bear (*Thalarctos maritimus*)	2
Dingo (*Canis dingo*)	3
Gray wolf (*Canis nubilus*)	10
Timber wolf (*Canis occidentalis*)	1
Texas red wolf (*Canis rufus*)	1
Coyote (*Canis latrans*)	3
California coyote (*Canis ochropus*)	1
Red fox (*Vulpes fulva*)	4
European fox (*Vulpes vulpes*)	1
Kit fox (*Vulpes velox*)	2
Great-eared fox (*Otocyon megalotis*)	1
Gray fox (*Urocyon cinereoargenteus*)	2
Bush dog (*Icticyon venaticus*)	1
Panda (*Ailurus fulgens*)	1
Raccoon (*Procyon lotor*)	6
Florida raccoon (*Procyon lotor elucus*)	2
Gray coatimundi (*Nasua narica*)	2
Red coatimundi (*Nasua nasua*)	1
Kinkajou (*Potos flavus*)	3
Mexican kinkajou (*Potos flavus astecus*)	1
Tayra (*Tayra barbara*)	1
American badger (*Taxidea taxus*)	1
Florida otter (*Lutra canadensis vaga*)	3
Black-footed ferret (*Mustela nigripes*)	1
Palm civet (*Paradoxurus hermaphroditus*)	2
Aard-wolf (*Proteles cristatus*)	1
Spotted hyena (*Crocuta crocuta*)	1
Striped hyena (*Hyæna hyæna*)	1
African cheetah (*Acinonyx jubatus*)	2
Lion (*Felis leo*)	7
Bengal tiger (*Felis tigris*)	1
Manchurian tiger (*Felis tigris longipilis*)	2
Leopard (*Felis pardus*)	2
Jaguar (*Felis onca*)	1
Brazilian ocelot (*Felis pardalis brasiliensis*)	2
Snow leopard (*Felis uncia*)	1
Mexican puma (*Felis aztecus*)	4
Mountain lion (*Felis hippolestes*)	1
Canada lynx (*Lynx canadensis*)	1
Northern wild cat (*Lynx uinta*)	1
Bay lynx (*Lynx rufus*)	3
Clouded leopard (*Neofelis nebulosa*)	1

PINNIPEDIA

California sea lion (*Zalophus californianus*)	2
San Geronimo harbor seal (*Phoca richardii geronimensis*)	1

RODENTIA

Woodchuck (*Marmota monax*)	3
Dusky marmot (*Marmota flaviventris obscura*)	1
Franklin's spermophile (*Citellus franklinii*)	1
Chipmunk (*Eutamias neglectus*)	1
Honduras squirrel (*Sciurus boothiæ*)	2
Albino squirrel (*Sciurus carolinensis*)	1
Bailey's pocket mouse (*Perognathus baileyi*)	1

ican beaver (*Castor canadensis*)	2
shopper mouse (*Onychomys leucogaster*)	3
rat (*Fiber zibethicus*)	1
an porcupine (*Hystrix africaeaustralis*)	1
y porcupine (*Acanthion brachyurum*)	2
porcupine (*Coendou prehensilis*)	2
can tree porcupine (*Coendou mexicanum*)	1
u (*Myocastor coypus*)	1
ral American paca (*Cuniculus paca virgatus*)	3
agouti (*Dasyprocta fuliginosa*)	1
cled agouti (*Dasyprocta punctata*)	2
ma agouti (*Dasyprocta punctata hmica*)	2
a's agouti (*Dasyprocta azarae*)	1
dad agouti (*Dasyprocta rubrata*)	5
w-rumped agouti (*Dasyprocta ifer cayennæ*)	1
ea pig (*Cavia porcellus*)	2
bara (*Hydrochærus hydrochæris*)	2

LAGOMORPHA

stic rabbit (*Oryctolagus cuniculus*)	17

EDENTATA

banded armadillo (*Dasypus novemcinctus*)	3

PRIMATES

spider monkey (*Ateles geoffroyi*)	2
an spider monkey (*Ateles ne tus*)	1
e-throated capuchin (*Cebus ucinus*)	6
ing capuchin (*Cebus apella*)	2
n capuchin (*Cebus fatuellus*)	1
la baboon (*Theropithecus obrus*)	1
na (*Papio porcarius*)	1
is baboon (*Papio cynocephalus*)	1
African baboon (*Papio ibeanus*)	1
rill (*Papio sphinx*)	1
(*Papio leucophæus*)	1
macaque (*Cynopithecus maurus*)	1
ry ape (*Simia sylvanus*)	2
ese macaque (*Macaca fuscata*)	2
tilled monkey (*Macaca nemestrina*)	1
ese macaque (*Macaca andamanensis*)	1
is monkey (*Macaca rhesus*)	21
eating macaque (*Macaca irus*)	1
macaque (*Macaca mordax*)	5
mangabey (*Cercocebus aterrimus*)	1
mangabey (*Cercocebus fuliginosus*)	2
Hagenbeck's mangabey (*Cercocebus hagenbecki*)	1
White-collared mangabey (*Cercocebus torquatus*)	1
Patas monkey (*Erythrocebus patas*)	1
Green guenon (*Lasiopyga callitrichus*)	3
Vervet guenon (*Lasiopyga pygerythra*)	1
Mona (*Lasiopyga mona*)	4
Roloway guenon (*Lasiopyga roloway*)	1
Chimpanzee (*Pan satyrus*)	1

ARTIODACTYLA

Wild boar (*Sus scrofa*)	1
Wart hog (*Phacochærus æthiopicus*)	1
Collared peccary (*Pecari angulatus*)	2
Hippopotamus (*Hippopotamus amphibius*)	2
Bactrian camel (*Camelus bactrianus*)	2
Arabian camel (*Camelus dromedarius*)	1
Guanaco (*Lama guanicoe*)	4
Llama (*Lama glama*)	6
Reindeer (*Rangifer tarandus*)	7
Fallow deer (*Dama dama*)	7
Axis deer (*Axis axis*)	8
Hog deer (*Hyelaphus porcinus*)	5
Sambar (*Rusa unicolor*)	2
Barasingha (*Rucervus duvaucelii*)	6
Burmese deer (*Rucervus eldii*)	1
Japanese deer (*Sika nippon*)	13
Red deer (*Cervus elaphus*)	17
Kashmir deer (*Cervus hanglu*)	2
Bedford deer (*Cervus xanthopygus*)	6
American elk (*Cervus canadensis*)	5
Virginia deer (*Odocoileus virginianus*)	6
Panama deer (*Odocoileus chiriquensis*)	1
Black-tailed deer (*Odocoileus columbianus*)	2
Blesbok (*Damaliscus albifrons*)	2
White-tailed gnu (*Connochætes gnou*)	1
Brindled gnu (*Connochætes taurinus*)	1
Lechwe (*Onotragus leche*)	1
Sable antelope (*Egocerus niger*)	1
Indian antelope (*Antilope cervicapra*)	3
Nilgai (*Boselaphus tragocamelus*)	2
East African eland (*Taurotragus oryx livingstonii*)	2
Mountain goat (*Oreamnos americanus*)	5
Tahr (*Hemitragus jemlahicus*)	6
Alpine ibex (*Capra ibex*)	2
Goat (*Capra hircus*)	1
Aoudad (*Ammotragus lervia*)	3
Rocky Mountain sheep (*Ovis canadensis*)	7
Arizona mountain sheep (*Ovis canadensis gaillardi*)	1
Mouflon (*Ovis musimon*)	3
Barbados sheep (*Ovis aries*)	1
Greenland musk-ox (*Ovibos moschatus wardi*)	2
Zebu (*Bos indicus*)	1
Yak (*Poëphagus grunniens*)	4
American bison (*Bison bison*)	15
Indian buffalo (*Bubalus bubalis*)	3

PERISSODACTYLA

Black rhinoceros (*Diceros bicornis*)	1
Malay tapir (*Tapirus indicus*)	1
Brazilian tapir (*Tapirus terrestris*)	1
Baird's tapir (*Tapirella bairdii*)	1
Grant's zebra (*Equus quagga granti*)	1
Grevy's zebra (*Equus grevyi*)	1
Zebra-horse hybrid (*Equus grevyi caballus*)	1
Zebra-ass hybrid (*Equus grevyi asinus*)	1

PROBOSCIDEA

Abyssinian elephant (*Loxodonta africana oxyotis*)	1
Sumatran elephant (*Elephas sumatranus*)	2

BIRDS

RATITÆ

South African ostrich (*Struthio australis*)	5
Somaliland ostrich (*Struthio molybdophanes*)	2
Nubian ostrich (*Struthio camelus*)	1
Rhea (*Rhea americana*)	1
Sclater's cassowary (*Casuarius philipi*)	1
Emu (*Dromiceius novæhollandiæ*)	2
Kiwi (*Apteryx mantelli*)	1

CICONIIFORMES

American white pelican (*Pelecanus erythrorhynchos*)	7
European white pelican (*Pelecanus onocrotalus*)	2
Roseate pelican (*Pelecanus roseus*)	2
Australian pelican (*Pelecanus conspicillatus*)	2
Brown pelican (*Pelecanus occidentalis*)	8
Florida cormorant (*Phalacrocorax auritus floridanus*)	4
Gannet (*Sula bassana*)	2
Great white heron (*Ardea occidentalis*)	2
Great blue heron (*Ardea herodias*)	1
Goliath heron (*Ardea goliath*)	1
American egret (*Casmerodius egretta*)	2
Black-crowned night heron (*Nycticorax nycticorax nævius*)	49
White stork (*Ciconia ciconia*)	1
Black stork (*Ciconia nigra*)	1
Lesser adjutant (*Leptoptilus javanicus*)	1
Wood ibis (*Mycteria americana*)	2
Straw-necked ibis (*Carphibis spinicollis*)	1
Sacred ibis (*Threskiornis æthiopicus*)	2
Black-headed ibis (*Threskiornis melanocephalus*)	3
Australian ibis (*Threskiornis strictipennis*)	4
White ibis (*Guara alba*)	10
Scarlet ibis (*Guara rubra*)	4
European flamingo (*Phœnicopterus roseus*)	1

ANSERIFORMES

Mallard (*Anas platyrhynchos*)	12
Black duck (*Anas rubripes*)	15
Australian black duck (*Anas superciliosa*)	2
Gadwall (*Chaulelasmus streperus*)	2
Falcated duck (*Eunetta falcata*)	2
European widgeon (*Mareca penelope*)	4
Baldpate (*Mareca americana*)	10
Green-winged teal (*Nettion carolinense*)	11
European teal (*Nettion crecca*)	4
Baikal teal (*Nettion formosum*)	6
Blue-winged teal (*Querquedula discors*)	1
Garganey (*Querquedula querquedula*)	6
Shoveller (*Spatula clypeata*)	5
Pintail (*Dafila acuta*)	16
Wood duck (*Aix sponsa*)	10
Mandarin duck (*Dendronessa galericulata*)	12
Canvasback (*Marila vallisineria*)	12
European pochard (*Marila ferina*)	3
Redhead (*Marila americana*)	11
Ring-necked duck (*Marila collaris*)	2
Tufted duck (*Marila fuligula*)	1
Lesser scaup duck (*Marila affinis*)	3
Greater scaup duck (*Marila marila*)	9
Rosy-billed pochard (*Metopiana peposaca*)	4
Egyptian goose (*Chenalopex aegyptiacus*)	3
Upland goose (*Chloëphaga leucoptera*)	1
Hawaiian goose (*Nesochen sandvicensis*)	2
Snow goose (*Chen hyperboreus*)	1
Greater snow goose (*Chen hyperboreus nivalis*)	2
Blue goose (*Chen cærulescens*)	10
White-fronted goose (*Anser albifrons*)	2
American white-fronted goose (*Anser albifrons gambeli*)	3
Bean goose (*Anser fabalis*)	2
Pink-footed goose (*Anser brachyrhynchus*)	2
Bar-headed goose (*Eulabeia indica*)	2
Canada goose (*Branta canadensis*)	6
Hutchins's goose (*Branta canadensis hutchinsii*)	6
White-cheeked goose (*Branta canadensis occidentalis*)	14
Cackling goose (*Branta canadensis minima*)	2
Brant (*Branta bernicla glaucogastra*)	10
Barnacle goose (*Branta leucopsis*)	5

l goose (*Plectropterus gam-*	1
ick (*Cairina moschata*)	1
(*Anseranas semipalmata*)	2
d tree duck (*Dendrocygna*	
is)	5
ree duck (*Dendrocygna*	4
(*Cygnus gibbus*)	4
swan (*Olor buccinator*)	1
wan (*Olor columbianus*)	1
(*Chenopis atrata*)	2

FALCONIFORMES

condor (*Gymnogyps cali-*	3
ure (*Cathartes aura*)	3
re (*Coragyps urubu*)	1
e (*Sarcoramphus papa*)	2
ird (*Sagittarius serpenta-*	1
ure (*Gyps fulvus*)	1
ick vulture (*Toryos tra-*	1
vulture (*Aegypius mona-*	2
Polyborus cheriway)	4
l eagle (*Uroaëtus audax*)	2
e (*Aquila chrysaëtos*)	5
d sea eagle (*Cuncuma*	2
(*Haliaëtus leucocephalus*)	7
ld eagle (*Haliaëtus leuco-*	3
d hawk (*Buteo platypte-*	1
awk (*Buteo borealis*)	7
tail (*Buteo borealis jamai-*	1
wk (*Falco sparverius*)	4

GALLIFORMES

Crax daubentoni)	1
curassow (*Mitu mitu*)	2
'enelope boliviana)	1
lis albiventris)	1
(*Ortalis vetula*)	1
inea fowl (*Acrylium vul-*	8
avo cristatus)	18
easant (*Polyplectron bical-*	1
sant (*Gennaeus nycthemo-*	2
rst's pheasant (*Chrysolo-* *erstiæ*)	1
pheasant (*Phasianus tor-*	10
'olinus virginianus)	2
ail (*Lophortyx gambelli*)	1
l (*Lophortyx californica*	1
(*Callipepla squamata*)	5
uail (*Cyrtonyx monte-*	2

GRUIFORMES

East Indian gallinule (*Porphyrio cal-* *vus*)	4
Pukeko (*Porphyrio stanleyi*)	1
Black-tailed moor hen (*Microtribonyx* *ventralis*)	2
American coot (*Fulica americana*)	1
South Island weka rail (*Ocydromus* *australis*)	3
Short-winged weka (*Ocydromus brac-* *hypterus*)	2
Earl's weka (*Ocydromus earli*)	1
Little brown crane (*Grus canadensis*)	4
White-necked crane (*Grus leucauchen*)	1
Indian white crane (*Grus leucoger-* *anus*)	1
Lilford's crane (*Grus lilfordi*)	2
Australian crane (*Grus rubicunda*)	2
Demoiselle crane (*Anthropoides virgo*)	4
Crowned crane (*Balearica pavonina*)	1
Kagu (*Rhynochetos jubatus*)	2

CHARADRIIFORMES

Lapwing (*Vanellus vanellus*)	1
Yellow-wattled lapwing (*Lobivanellus* *indicus*)	1
Pacific gull (*Gabianus pacificus*)	1
Great black-backed gull (*Larus mari-* *nus*)	4
Herring gull (*Larus argentatus*)	3
Silver gull (*Larus novæhollandiæ*)	16
Laughing gull (*Larus atricilla*)	2
Crowned pigeon (*Goura coronata*)	2
Victoria crowned pigeon (*Goura vic-* *toria*)	1
Australian crested pigeon (*Ocyphaps* *lophotes*)	4
Bronze-wing pigeon (*Phaps chalcop-* *tera*)	3
Marquesan dove (*Gallicolumba rubes-* *cens*)	12
Bleeding-heart dove (*Gallicolumba* *luzonica*)	2
Wonga-wonga pigeon (*Leucosarcia pi-* *cata*)	2
Wood pigeon (*Columba palumbus*)	7
Mourning dove (*Zenaidura macroura*)	3
White-fronted dove (*Leptotila fulvi-* *ventris brachyptera*)	4
Necklaced dove (*Spilopelia tigrina*)	4
Zebra dove (*Geopelia striata*)	3
Bar-shouldered dove (*Geopelia humo-* *ralis*)	1
Inca dove (*Scardafella inca*)	1
Cuban ground dove (*Chæmepelia pas-* *serina aflavida*)	1
Green-winged dove (*Chalcophaps in-* *dica*)	1
Ringed turtledove (*Streptopelia ri-* *soria*)	3
Fruit pigeon (*Lamprotreron superba*)	1

PSITTACIFORMES

Kea (*Nestor notabilis*)	4
Musk lorikeet (*Glossopsitta concinna*)	2

Cockateel (*Calopsitta novæhollandiæ*)	2
Roseate cockatoo (*Kakatoe roseicapilla*)	15
Bare-eyed cockatoo (*Kakatoe gymnopis*)	1
Leadbeater's cockatoo (*Kakatoe leadbeateri*)	2
Philippine cockatoo (*Kakatoe hæmaturopygia*)	1
White cockatoo (*Kakatoe alba*)	1
Sulphur-crested cockatoo (*Kakatoe galerita*)	9
Great red-crested cockatoo (*Kakatoe moluccensis*)	1
Cassin's macaw (*Ara auricollis*)	1
Mexican green macaw (*Ara mexicana*)	2
Severe macaw (*Ara severa*)	1
Blue-and-yellow macaw (*Ara ararauna*)	9
Red-and-blue-and-yellow macaw (*Ara macao*)	7
Hahn's macaw (*Diopsittaca hahni*)	1
White-eyed paroquet (*Aratinga leucophthalmus*)	1
Petz's paroquet (*Eupsittula canicularis*)	6
Golden-crowned paroquet (*Eupsittula aurea*)	8
Weddell's paroquet (*Eupsittula weddellii*)	8
Blue-winged parrotlet (*Psittacula passerina*)	14
Golden paroquet (*Brotogeris chrysosema*)	4
Tovi paroquet (*Brotogeris jugularis*)	10
Orange-winged paroquet (*Brotogeris chiriri*)	4
Yellow-naped parrot (*Amazona auropalliata*)	4
Mealy parrot (*Amazona farinosa*)	2
Orange-winged parrot (*Amazona amazonica*)	6
Blue-fronted parrot (*Amazona æstiva*)	1
Red-crowned parrot (*Amazona viridigenalis*)	6
Double yellow-head parrot (*Amazona oratrix*)	10
Yellow-headed parrot (*Amazona ochrocephala*)	4
Festive parrot (*Amazona festiva*)	5
Lesser white-fronted parrot (*Amazona albifrons nana*)	1
Santo Domingo parrot (*Amazona ventralis*)	3
Cuban parrot (*Amazona leucocephala*)	4
Maximilian's parrot (*Pionus maximiliani*)	1
Dusky parrot (*Pionus fuscus*)	2
Blue-headed parrot (*Pionus menstruus*)	2
Amazonian caique (*Pionites xanthomeria*)	5
Lesser vasa parrot (*Coracopsis nigra*)	1
Greater vasa parrot (*Coracopsis vasa*)	1
Pennant's paroquet (*Platycercus elegans*)	2
Rosella paroquet (*Platycercus eximius*)	1
Black-tailed paroquet (*Polytelis melanura*)	1
King paroquet (*Aprosmictus cyanopygius*)	1
Crimson-winged paroquet (*Aprosmictus erythropterus*)	
Ring-necked paroquet (*Conurus torquatus*)	1
Nepalese paroquet (*Conurus nepalensis*)	1
Philippine green parrot (*Tanygnathus lucionensis*)	1
Grass paroquet (*Melopsittacus undulatus*)	19

CORACIIFORMES

Giant kingfisher (*Dacelo gigas*)	2
Yellow-billed hornbill (*Lophoceros leucomelas*)	2
Morepork owl (*Spiloglaux novæseelandiæ*)	1
Barred owl (*Strix varia*)	6
Snowy owl (*Nyctea nyctea*)	1
Screech owl (*Otus asio*)	1
Great horned owl (*Bubo virginianus*)	9
Eagle owl (*Bubo bubo*)	1
American barn owl (*Tyto perlata pratincola*)	5
Ariel toucan (*Ramphastos ariel*)	1

PASSERIFORMES

Cock of the rock (*Rupicola rupicola*)	1
Silver-eared hill-tit (*Mesia argentauris*)	1
Red-billed hill-tit (*Liothrix luteus*)	17
Black-gorgeted laughing thrush (*Garrulax pectoralis*)	2
White-eared bulbul (*Otocompsa leucotis*)	3
Red-eared bulbul (*Otocompsa jocosa*)	2
European blackbird (*Turdus merula*)	2
Piping crow shrike (*Gymnorhina tibicen*)	2
Satin bower bird (*Ptilonorhynchus violaceus*)	1
European raven (*Corvus corax*)	1
Australian crow (*Corvus coronoides*)	1
American crow (*Corvus brachyrhynchos*)	1
Magpie (*Pica pica hudsonica*)	2
Yucatan jay (*Cissilopha yucatanica*)	1
Blue jay (*Cyanocitta cristata*)	3
Green jay (*Xanthoura luxuosa*)	3
Australian gray jumper (*Struthidea cinerea*)	1
Starling (*Sturnus vulgaris*)	9

ling (*Lamprocorax metal-*	
	5
(*Telespyza cantans*)	4
ager (*Ramphocelus dimi-*	
	1
(*Thraupis cana*)	1
ydah (*Steganura para-*	
	3
whydah (*Tetrænura re-*	
	2
aver (*Pyromelana afra*)	1
aver (*Quelea quelea*)	1
weaver (*Foudia madagas-*	
	1
axbill (*Estrilda astrilda*)	3
waxbill (*Estrilda rhodo-*	
	1
(*Munia punctulata*)	3
nun (*Munia maja*)	2
nun (*Munia atricapilla*)	13
sted finch (*Munia casta-*	
	4
funia oryzivora)	14
inch (*Munia oryzivora*)	1
finch (*Poëphila persona-*	
	6
Gouldian finch (*Poëphila*	
	1
ouldian finch (*Poëphila*	
	1
ch (*Steganopleura gut-*	
	8
Tæniopygia castanotis)	17
Cutthroat finch (*Amadina fasciata*)	12
Red-headed finch (*Amadina erythrocephala*)	2
Hooded oriole (*Icterus cucullatus*)	2
Yellow-tailed oriole (*Icterus mesomelas*)	1
Purple grackle (*Quiscalus quiscula*)	2
Greenfinch (*Chloris chloris*)	3
European goldfinch (*Carduelis carduelis*)	4
Bramble finch (*Fringilla montifringilla*)	5
Yellowhammer (*Emberiza citrinella*)	3
House finch (*Carpodacus mexicanus frontalis*)	2
San Lucas house finch (*Carpodacus mexicanus ruberrimus*)	2
Canary (*Serinus canarius*)	20
Gray singing finch (*Serinus leucopygius*)	10
Slate-colored junco (*Junco hyemalis*)	1
White-throated sparrow (*Zonotrichia albicollis*)	2
San Diego song sparrow (*Melospiza melodia cooperi*)	3
Saffron finch (*Sicalis flaveola*)	10
Seed eater (*Sporophila gutturalis*)	2
Nonpareil (*Passerina ciris*)	2
Leclancher's nonpareil (*Passerina leclancheri*)	2
Cardinal (*Cardinalis cardinalis*)	1
Red-crested cardinal (*Paroaria cucullata*)	3

REPTILES

ligator mississipiensis)	43
(*Physignathus lesucurii*)	3
(*Phrynosoma cornutum*)	1
Ophisaurus ventralis)	1
(*Heloderma suspectum*)	6
or (*Varanus gouldii*)	3
lizard (*Tiliqua scin-*	
	1
(*Python molurus*)	2
(*Python reticulatus*)	1
unectes murinus)	2
or (*Constrictor constric-*	
	2
(*Coluber constrictor*)	5
Coluber constrictor flavi-	
	6
ake (*Coluber flagellum*)	2
(*Elaphe quadrivittata*)	1
Elaphe guttata)	2
ake (*Elaphe obsoleta*)	1
Pituophis melanoleucus)	4
Pituophis sayi*)	4
snake (*Pituophis cateni-*	
	1
(*Natrix sipedon*)	1
r snake (*Natrix sipedon*	
	1
(*Thamnophis sirtalis*)	1
ond rattlesnake (*Crotalus*	
	4
Snapping turtle (*Chelydra serpentina*)	5
Rossignon's snapping turtle (*Chelydra rossignonii*)	1
Musk turtle (*Kinosternon odoratum*)	
Mexican musk turtle (*Kinosternon sonoriense*)	1
South American musk turtle (*Kinosternon scorpioides*)	5
Pennsylvania musk turtle (*Kinosternon subrubrum*)	2
Wood turtle (*Clemmys insculpta*)	1
South American terrapin (*Nicoria punctularia*)	1
Painted turtle (*Chrysemys picta*)	1
Cooter (*Pseudemys scripta*)	2
Central American cooter (*Pseudemys ornata*)	2
Gopher tortoise (*Gopherus polyphemus*)	1
Duncan Island tortoise (*Testudo ephippium*)	1
Indefatigable Island tortoise (*Testudo porteri*)	1
Albemarle Island tortoise (*Testudo vicina*)	2
South American tortoise (*Testudo denticulata*)	2
Long-necked turtle (*Chelodina longicollis*)	1

STATEMENT OF THE COLLECTION

Accessions during the year

	Mammals	Birds	Reptiles	Total
Presented	45	124	52	[illegible]
Born and hatched in National Zoological Park	42	27		[illegible]
Received in exchange	12	60	4	[illegible]
Purchased	9	81	8	[illegible]
Transferred from other Government departments	7	11		[illegible]
Captured		2		[illegible]
Deposited	3	4		[illegible]
Total	118	309	64	[illegible]

SUMMARY

Animals on hand July 1, 1923	[illegible]
Accessions during the year	[illegible]
Total animals handled	[illegible]
Deduct loss (by exchange, death, and return of animals on deposit)	[illegible]
Animals on hand June 30, 1924	[illegible]

Class	Species	Individuals
Mammals	177	[illegible]
Birds	276	[illegible]
Reptiles	41	[illegible]
Total June 30, 1924	494	[illegible]

VISITORS

Attendance records exceeded the previous year (1923) by 49,452 and were 42,043 over the record year for the park (1921). The total number of visitors, as determined by count and estimate, was 2,442,880. This makes the fifth year in succession that the attendance has exceeded two millions. The greatest attendance in any one month was 352,425 in September, 1923.

The attendance by months was as follows:

1923		1924	
July	269,400	January	73,440
August	279,550	February	93,263
September	352,425	March	211,250
October	215,975	April	313,150
November	114,210	May	209,367
December	111,000	June	199,850

Schools, classes, and other similar organizations visiting the park during the year numbered 160, with a total of 15,100 individuals.

It is interesting to note the increase in the number of visitors to the park in the past 12 years. Following are the attendance records from 1913 to 1924:

1913	633,526	1919	1,964,715
1914	733,277	1920	2,229,605
1915	794,530	1921	2,400,837
1916	1,157,110	1922	2,164,254
1917	1,106,800	1923	2,393,428
1918	1,593,227	1924	2,442,880

IMPROVEMENTS

Work on the new paddocks for hoofed animals near the Connecticut Avenue entrance, described fully in the last report, was finished early in the year, and the 11 yards thus provided were all occupied by animals in the fall. The superior arrangement of these paddocks for the care and exhibition of the animals has been very favorably commented upon by officials from other zoological gardens, and the pleasing sight of herds of animals in such large inclosures is greatly admired by visitors.

In late winter the birds were all removed from the North American waterfowl lake and early in the spring the lake was thoroughly cleaned of silt. The work was completed so that the waterfowl were returned before the season for nesting. The sewer from the office and stables was extended to connect with the Rock Creek intercepting sewer. A new sidewalk on the east side of the road opposite the restaurant building was completed, and roads, walks, and bridle paths throughout the park were repaired. Two old boilers in the central heating plant were replaced with new boilers of improved pattern, thus considerably increasing the heating capacity of the plant.

The usual repairs to roofs, gutters and downspouts, fences, and cages were made and much of the ironwork was painted. The old metal awning frames over the walk around the bear cages were removed, since these unsightly frames were no longer needed, the trees now providing ample shade. Work was begun on the warehouse for new or surplus animals, approved in the last plan of operations. This long-needed structure will be completed in the present year.

The most important improvement of the year has been the complete reconstruction of the central refreshment building. The old restaurant was found to be in such bad condition that very little of the material in it could be used, and in order to provide the new structure with suitable foundations it was almost entirely wrecked. The new restaurant is built chiefly of chestnut timbers salvaged from the dead trees in the reservation, and adds greatly to the ap-

pearance of the park. It was leased to a competent restaurant man, who opened it to the public in April.

IMPORTANT NEEDS

Exhibition building for birds.—The outstanding need of the park is a new building for exhibition of birds. As pointed out in previous reports, the old bird house was built as a temporary structure many years ago, and is now not only in bad condition and virtually beyond repair but is so small that only a part of the valuable collection of birds can be exhibited at one time. The public space is, furthermore, entirely too restricted for present-day crowds of visitors. The collection of birds is growing in importance and value year by year, as rare and unusual specimens from all parts of the world are presented to the Government zoological gardens. Public interest in the bird collection is very great, as attested by the throngs of visitors that fill the old bird house, and it is greatly to be hoped that a new building may soon be provided for the proper care and exhibition of the birds and for the accommodation of the constantly increasing number of visitors who wish to see them to advantage.

Funds for purchase of animals.—Although the National Zoological Park receives numerous animals each year as gifts or in exchange for surplus stock reared in the park, sufficient funds have never been available for the purchase of rare and unusual species offered for sale from time to time. A representative or well-balanced collection of the living animals of the world can be built up and maintained only by the purchase of certain types of animals not otherwise obtainable, and opportunities to secure these desiderata must be taken up promptly if the animals are to be obtained. Animals greatly needed to fill definite gaps in the collection are offered for sale from time to time, but the park is most often unable to purchase them for lack of funds. In addition to increased appropriations to cover cost and transportation of animals, it is suggested that a fund, to be deposited with the Smithsonian Institution and held for the purchase of animals for the National Zoological Park, be inaugurated. This fund might be increased by gift or bequest, and could be regularly maintained by an act of Congress authorizing deposit in it of certain miscellaneous revenues of the park now turned into the general fund of the Treasury, these including rent of refreshment stands, restaurant, and other similar concessions.

Respectfully submitted.

N. HOLLISTER, *Superintendent.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 7

EPORT ON THE ASTROPHYSICAL OBSERVATORY

IR: The Astrophysical Observatory was conducted under the fol-ing passage of the independent offices appropriation act approved ruary 13, 1923:

strophysical Observatory: For maintenance of the Astrophysical Observa-, under the direction of the Smithsonian Institution, including assistants, hase of necessary books and periodicals, apparatus, making necessary rvations in high altitudes, repairs and alterations of buildings, and miscel-ous expenses, $15,500.

he observatory occupies a number of frame structures within an losure of about 16,000 square feet south of the Smithsonian ad-nistration building at Washington, and also a cement observing ion and frame cottage for observers on a plot of 10,000 square leased from the Carnegie Solar Observatory on Mount Wilson, if.

new solar observing station on Mount Harqua Hala, Ariz., was ted in July, 1920, at the expense of funds donated for the pur-e by Mr. John A. Roebling, of Bernardsville, N. J., and this sta-n has been occupied as a solar radiation observing station by the rophysical Observatory since October, 1920.

he present value of the buildings and equipment for the Astro-sical Observatory owned by the Government is estimated at ,000. This estimate contemplates the cost required to replace the fit for the purposes of the investigation.

WORK OF THE YEAR

here have been several features of particular interest, including installation of daily telegraphic reports from the Arizona and ile solar-radiation stations, certain experimental forecasts based these reports, and the measurement of the energy distribution in spectra of 10 of the brighter stars.

Work at Washington.—As in previous years, the variation of the n has been the main concern. The generosity of Mr. John A. ebling enabled arrangements to be made for daily telegrams from two solar radiation stations. This service was begun September 1923. The results obtained in Chile are cabled in code, so that the ighted mean solar-constant value, the date and hour of observa-

tion, and its grade are all included in two words. Messages arrive at Washington from both stations within 24 hours of the actual measurements, and generally represent mean results of five independent determinations at each station. Arrangements have been made (also owing to Mr. Roebling's interest and generosity) to test the value of the solar measurements for forecasting according to the methods of Mr. H. H. Clayton. For this purpose Mr. Clayton has had a small office[1] and one assistant near his home in Canton, Mass., where he receives before noon daily from the Smithsonian Institution the weighted mean of the solar-constant values observed in Arizona and Chile on the preceding day. He makes his forecasts for 3, 4, 5, and 27 days in advance, and mails them to the Institution on the same afternoon. Thus we receive the forecasts sufficiently long before their maturity to make a very real and searching test of their validity.

These forecasts for definite days relate to the mean temperature of New York City, and are later on compared with the observed temperatures and analyzed by several purely mathematical methods quite independently of any bias of the computer. The official weather services of the various countries do not, of course, make predictions parallel to these, except in Argentina, where such forecasts are made by similar methods to Clayton's. Hence it is impossible to know at present how much gain, if any, Mr. Clayton's solar forecasts show over the present official methods. That they do show some prevision of the event, even to five days after the solar observations, is certain.

Hitherto, however, the 27-day detailed forecasts have shown no correlation with the New York temperatures. This is not at all surprising. Indeed, all such forecasts have to contend against great odds. For we recall that the march of temperature often goes quickly from crest to trough, so that even if a true forecast could be made, and it should be no more than 12 or 24 hours off in point of time, there would be large divergences between the prediction and the event. With the unyielding mathematical methods of verification this would greatly diminish the correlation found.

A fairer test for very long-range forecasts is found in general statements as to the expected departure from mean normal temperatures for coming months. These Mr. Clayton has furnished from 15 to 30 days before the beginning of each month from December, 1923, to the present time. He also furnishes similar predictions about the approaching weeks furnished three days before the beginning of the week in question. With few exceptions, these broader prognostications have been fairly verified.

[1] Thanks are due to the Canton Historical Society for use of these quarters.

On the whole, therefore, although the results are as yet far from being entirely satisfying, these experimental forecasts of Mr. Clayton's are promising enough to warrant further trial. New methods are continually being devised and tried in making them. Mr. Roebling has generously arranged to continue them until June 30, 1925. As the work is purely experimental no detailed publication of it will be made at present.

Naturally, if the forecasts made by Mr. Clayton really represent solar changes, he can not succeed unless good solar measurements are supplied. As soon as we began to receive daily telegrams from both stations occasional fairly wide disagreements of individual days commanded attention. We felt it necessary, in studying the causes of such disagreements, to revise again entirely the systems of little corrections to solar-constant values which have to be made to allow for the haziness and humidity of our atmosphere. This revision could be made with more advantage because much additional data had meanwhile accumulated.

Mr. Fowle and Mrs. Bond have worked over this matter during practically their entire time, which, however, owing to furlough, was only about three months in Mrs. Bond's case. A new method of determining these corrections has been devised by the director and Mr. Fowle, which eliminates satisfactorily the influence of the solar changes which have occurred. Hitherto this matter of solar change superposed upon the small terrestrial sources of error which we desire to eliminate has been very embarrassing. Of course, if one could wait many years before proceeding to evaluate the terrestrial effects, the solar changes, being independent or but loosely connected with local terrestrial ones, would be eliminated in the mean of a mass of observations. We can, indeed, after several years more of observing, finally proceed in this way. But wishing to make immediate use of our results a new method of procedure has fortunately occurred to us which permits us to avoid the interference of solar changes altogether. The details will be published soon.

As both to us and to the Chief of the Weather Bureau it seemed unwise to publish preliminary values of the solar constant which later on would have to be corrected, we have discontinued the frequent publications of them in the Monthly Weather Review which we have been accustomed to make for several years past. After we come to a fully satisfactory basis of systematic atmospheric corrections, these publications may be resumed.

Of the two solar-radiation stations, Montezuma, Chile, has proved far more suitable to the purpose than Harqua Hala, Ariz. It seems probable that a place somewhat farther west and decidedly higher

would be preferable to Mount Harqua Hala. Violent storms occur there in various months of the year, and the summer months in particular have proved very unsatisfactory. If financial means were available it would be highly desirable to remove the station to another site, and, indeed, a better one is already selected which would present many advantages. The cost of removal would be about $7,000.

The systematic revision of results in the hands of Mr. Fowle and Mrs. Bond has led to much improvement, as shown by the close accord of daily solar-constant values at the two stations. For the period September, 1922, to March, 1924, the average daily difference is less than 0.5 per cent. In the month of October, 1923, when the weather was fine at both stations almost every day, it ran as low as 0.2 per cent.

The solar-constant values have continued almost without exception below normal. From March, 1922, until June, 1924, the mean result for every single month was below the normal value, which is 1.938 calories per square centimeter per minute. This long-continued defect of solar radiation may well have produced interesting climatic effects. It is interesting to report in this connection a letter from M. Antoniadi, of France, stating that the polar cap of Mars is larger than it has been under parallel conditions for 70 years, and asking if the solar-radiation measurements showed anything unusual. Naturally decreased solar radiation would tend to produce that effect.

A letter from the eminent meteorologist, Doctor Bjerknes, of Norway, to Doctor Hale, of the Mount Wilson Observatory, has been referred to us, and with permission of the author is here copied in part as an indication of expert appreciation of our work:

> I have been greatly interested in the establishment of a complete "circumpolar" weather service, as this only will give the full view of the changing states of the atmosphere. This circumpolar service is now beginning to become a reality. The charts may soon more or less cover the entire northern hemisphere.
>
> But then another idea arises by itself, namely, to bring these more and more complete pictures of the varying states of our atmosphere into connection with their ultimate cause, the solar activity. * * *
>
> I am aware that the solar constant is determined every day at Mount Wilson Solar Observatory, and at the Calama Observatory of the Smithsonian Institution. * * * I think it would now be of high importance to every day have the most recent value of the solar constant incorporated in the daily meteorological issue.
>
> If this should be practicable, the value of the data which are every day at the disposal of the meteorologist would increase enormously. It is, of course, dangerous to prophesy. But a new era may perhaps begin for meteorology from the moment when the meteorologist has at his disposal every day complete data both for the sun's activity and for the state of the atmosphere over an entire hemisphere of the earth.

Work at the two solar-radiation stations.—The results just discussed are, of course, the fruit of the zealous work of our observers in Arizona and Chile. Mount Harqua Hala continues under the direction of Mr. A. F. Moore, who was assisted until March 1, 1924, by Mr. P. E. Greeley. After Mr. Greeley's resignation, Mr. A. H. Worthing assisted from May 20 to June 30, but then resigned. At Montezuma, Chile, the station continued in charge of Mr. L. B. Aldrich, assisted by Mr. F. A. Greeley.

Many comforts and observing improvements have been added at both stations at small expense owing to the ingenuity and hard manual labor of the observers. At both stations all possible days for solar-constant work have been utilized, and with very high accuracy of observation. About 75 per cent of all days were observed in Arizona and above 80 per cent in Chile. The months of July, August, and September, however, were very unfavorable at Harqua Hala, because of unusual cloudiness which prevailed all over that section of the United States. This abnormal state of the sky was indeed made specially prominent by the almost complete failure of all the California observations of the total solar eclipse of September 10, 1923. Many observations of these months must be rejected on account of unfavorable sky.

Mr. W. H. Hoover assisted Mr. Moore for a few weeks in May, 1923. While Mr. and Mrs. Moore were away in Australia setting up near Sydney a solar-radiation outfit ordered by Rev. E. F. Pigot, of Riverview College, for a committee of interested Australians, Mr. and Mrs. Hoover relieved them at Harqua Hala from July until September. Mr. Hoover was thus prepared by actual field experience to be director of the Argentine Government's new solar-radiation station at La Quiaca.

The outfit for this station was prepared at the Smithsonian Institution after designs of the writer, and the finer parts, such as those of the bolometer and galvanometer, were constructed by Mr. Hoover. Shipment was made in January, 1924, and the station at La Quiaca made ready for solar observing in June, 1924. Thus the Argentine Government is the first agency outside the Smithsonian Institution to undertake regular determinations of the variation of the sun. Their official weather service still receives daily telegraphic reports from our station at Montezuma, Chile, and it will supplement these by its own solar-radiation measurements at La Quiaca.

Field work at Mount Wilson.—The director and Mrs. Abbot occupied this station from July to October, 1923. Three objects were in view—First, to set up apparatus and begin observations on the variations of atmospheric ozone after the ingenious spectroscopic method of Fabry and Buisson. M. Fabry was so kind as to supervise the

ordering in Paris of all the special quartz and fluorite optical parts needed. Owing to the detached service of the Smithsonian instrument maker, Mr. Kramer, who was engaged in making the Australian and Argentine solar radiation outfits, no work had been done toward mounting the optical parts for ozone studies or, indeed, toward preparing for other experiments of the expedition. So it happened that the director spent several weeks on Mount Wilson at instrument making and was not quite ready to begin the ozone observations in 1923.

The second object was to test new improvements on the solar cooker. By the lively interest of Director Stratton, the Bureau of Standards had constructed by their skillful glass blower, Mr. Sperling, a long, pyrex-glass, double-walled vacuum tube to inclose the heater tube of the Mount Wilson solar cooker. As stated in Volume IV of the Annals of the Astrophysical Observatory, nearly nine-tenths of the loss of heat had hitherto occurred from the heater tube within the great mirror. It was to check this loss that the new device was planned.

Unfortunately, the aluminum of the mirror was found much deteriorated and could not be fully restored by polishing. Hence the mirror was very inefficient in 1923. Nevertheless, the vacuum tube showed its efficiency by the fact of the heating of the oven to 175° C., or fully 25° C. above the usual maximum temperatures of 1920. But new troubles arose. The oil circulation became leaky at the new high temperature, spontaneous combustion of the cotton heat insulation occurred, and the experiments had to be stopped after long-continued vain attempts to close the leaks by soldering. Also the vacuum tube, which was really made too long for safety, soon broke under the unequal heating strains. After this breakage occurred the maximum temperatures attained were but 120° C., showing that over 50° C. of advantage came from the employment of the vacuum device. The experiments seemed so promising that a continuation of them was arranged for 1924, and new and improved instrumental constructions were prepared by Mr. Kramer during the winter months

The third piece of work attempted was with the 100-inch telescope on the energy spectrum of the brighter stars. Messrs. Abbot and Aldrich had, indeed, done this with moderate success in 1922, employing the vacuum bolometer and galvanometer. But great trouble had been found in the use of those instruments at extreme sensibility. Fortunately, the late Dr. E. F. Nichols had offered to have prepared a radiometer of improved design for the work. This instrument, constructed by Dr. J. D. Tear, proved equally as sensitive

as the bolometer used in 1922, and practically as easy to use as a meter stick.

With it and with a new optical arrangement designed by the writer, and largely constructed by him, very interesting results were obtained. The spectra of 10 stars, including the sun, as cast by a 60° flint-glass prism, were measured successfully. As the sun's energy spectrum is well known, it was possible to eliminate by comparison with it all of the chief instrumental and atmospheric losses. Thus the results appear as stellar energy curves outside our atmosphere, expressed on the normal or wave-length scale. As the deflections observed were fairly large, no less than 50 millimeters at maximum in the spectrum of Betelgeuse, for example, the curves are of very fair accuracy over most of their extent. It was possible to improve them in the shorter wave-length region where they were inaccurate by employing visual and photographic results of German observers. Thus the whole of the intense part of the spectrum of the yellow and red stars and a large part of that of the white and blue ones were well delineated. From these results good estimates could be made of the star temperatures on the "black-body" basis. Furthermore, estimates of the diameters necessary in "black bodies" to produce at those temperatures the observed amounts of energy were made. It is gratifying to find these results on stellar diameters as accordant as could be expected with those of Pease made by means of Michelson's method of the interferometer. A summary follows:

Stellar temperatures, radiation, and diameters

Star	Absolute temperature C.	N [1] Unit=10^{-11}	Parallax	Diameter ⊙=1 [2]		
				Radiometer	Interferometer	Russell
	Degrees		"			
Sun	6,000					
β Orionis	16,000	3.20	0.007	20		2.8
α Lyrae	14,000	6.10	.130	2		3.
α Canis Majoris	11,000	6.60	.370	1.2	2	
α Canis Minoris	8,000	1.24	.315	1.1		1.6
α Aurigae	5,800	2.20	.071	13		9.
α Tauri	3,000	2.54	.053	70	39	
β Pegasi	2,850	1.11	.026	94	82	
α Orionis	2,600	7.90	.017	510	280	
α Herculis	2,500	3.60	.007 .013	900 480		230.

[1] N=ratio of stellar to solar radiation outside earth's atmosphere.
[2] To express in kilometers, multiply by 1.42×10^4. To express in miles, multiply by 0.865×10^4.

SUMMARY

The year has been notable for the establishment of daily telegraphic solar-constant intelligence from Montezuma, Chile, and Harqua Hala, Ariz., through the interest and generosity of Mr. John

A. Roebling. Also, due to the same support, experimental temperature forecasts for New York City, based on these daily reports of solar changes, have been regularly submitted by Mr. H. H. Clayton for certain periods of time in advance. Revision of the solar radiation results of the two stations shows average daily accord to less than 0.5 per cent in their solar-constant determinations. Observations have been received from one or both solar-radiation stations on about 90 per cent of all days. Further experiments with the solar cooker have resulted in some advancement and have pointed the way to further progress. Apparatus has been made ready for determinations of atmospheric ozone after the method of Fabry and Buisson. Highly interesting results on stellar energy spectrum distribution and on star diameters have been obtained with a Nichols radiometer in cooperation with the Mount Wilson Observatory of the Carnegie Institution.

Respectfully submitted.

C. G. ABBOT, *Director.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 8

REPORT ON THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

SIR: I have the honor to submit the following report on the operations of the United States Regional Bureau of the International Catalogue of Scientific Literature for the fiscal year ending June 30, 1924.

As has been stated in several previous annual reports, political and financial conditions in Europe, caused by the late war, forced a suspension of the printing and publishing of the International Catalogue after the fourteenth annual issue had been completed in July, 1921. A total of 240 volumes had been published up to the time that printing was suspended. This series of publications constitutes a classified index catalogue of the scientific literature of the world for 14 years, from 1901 to 1914, inclusive, and furnishes the only example of such work ever published. In spite of numerous attempts to resume publication it has been found impossible to do so in the face of the continued unsettled condition of international monetary standards. The continued high price of materials and labor entering into publishing expenses brings the cost of the 10,000 pages of each annual issue of the catalogue up to impossible figures when expressed in terms of the depreciated currency of many of the cooperating countries.

In 1922, finding that immediate resumption of publication was impossible, an international convention was held in Brussels to consider means whereby the organization could be held intact. A resolution to this end was suggested by this regional bureau and was unanimously agreed to. The resolution was:

> That the convention is of opinion that the international organization should be kept in being through mutual agreement to continue as far as possible the work of the regional bureaus until such time as it may be economically possible to resume publication.

The other countries represented at this convention, as well as the United States, have since that time lived up to the spirit of this resolution.

The present aim of this bureau is to collect and record the data necessary to index the current scientific publications of the United

States without attempting to classify the subjects of the papers themselves, for before publication is resumed it will be necessary to completely revise the classification schedules heretofore used in order to keep abreast with ever advancing scientific discoveries and the consequently changing requirements of investigators and students.

The need of a definite, concrete, and internationally satisfactory plan of operation to govern any organization undertaking to index and classify current scientific literature is now more evident than it was 24 years ago when the International Catalogue was founded, for since the publication of the catalogue by this organization was suspended many plans have been suggested but none have so far been found satisfactory or practical. Schemes which take into consideration only local or special needs are found useless when world-wide needs are considered. And when such schemes are compared with the far-reaching, time-tried, and officially recognized organization of the International Catalogue of Scientific Literature, whose scope embraces all scientific subjects and whose field is world-wide, their inadequacy is at once apparent.

In aiming to meet the various needs of scientific specialists and students several forms of service are required:

1. Immediate notices which may be furnished by means of cards or assembled reference data to meet the requirements of specialists in restricted fields.

2. Monthly or quarterly classified records furnishing not only complete index data but also, to meet the needs of general students as well as specialists, brief abstracts of the subject contents of each paper noted.

3. Yearly catalogues or yearbooks, each covering a recognized subdivision of science, collectively furnishing a permanent, assembled, classified record of all scientific activities. Such collective records are the only ones suited to meet the needs and requirements of librarians as well as future investigators.

As in the preparation of each of these aids to scientific investigation the same materials are required and the same methods of indexing and classifying are employed, it is evident that consolidation, or at least close cooperation, should exist between all organizations undertaking such work.

Many abstracting agencies now exist and attempts are being made to establish more, but taken collectively they fail to cover all branches of science and are too dissimilar in their methods and form of publication to take the place of a concise, classified, permanent record of scientific publications so urgently needed by specialists

and librarians alike. It was chiefly to meet this need that the International Catalogue was originally founded.

Respectfully submitted.

LEONARD C. GUNNELL,
Assistant in Charge.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 9

REPORT ON THE LIBRARY

SIR: I have the honor to submit the following report on the activities of the library of the Smithsonian Institution and of the libraries of the bureaus under its administration for the fiscal year ended June 30, 1924.

The use of the library by members of the Smithsonian staff has been stimulated by the publication each fortnight in Smithsonian Local Notes of principal additions to the collections and by the daily circulation among heads of scientific departments and divisions of a typewritten list of original articles appearing in periodicals received for the main library.

While the libraries administered under the Smithsonian Institution are used principally for reference in connection with advanced scientific and technological research and special administrative problems, their facilities are open to all. Every book is available to the public, through consultation, by borrowing through an accredited library, or by means of photographic reproduction at the correspondent's expense.

SMITHSONIAN MAIN LIBRARY

The number of publications received for the main library was 8,678, consisting of 4,044 volumes, 2,126 parts, 2,332 pamphlets, and 176 charts. The total number of accessions has reached 544,980, representing 901,985 publications.

Theses and academic publications were received from abroad from universities located at the following places: Algiers, Berlin, Bern, Copenhagen, Dijon, Dorpat, Freiburg, Giessen, Graz, Halle, Kiel, Königsberg, Liège, London, Lund, Manchester, Marburg, Montpellier, Paris, Prague, Rennes, Strasbourg, Tokyo, Utrecht, Vienna, Warsaw, Wilno, and Zürich.

Of a total of 3,352 missing parts of incomplete sets requested in exchange, 1,786 were secured, a percentage of 53.2 as compared with 43.2 last year.

SMITHSONIAN OFFICE LIBRARY

The loans from the office library were 2,749. The number of volumes catalogued was 5,348. The number of new titles added to the author catalogue was 1,125.

The gift of Dr. F. W. Clarke of 170 pamphlets, in continuation of his collection of papers on the atomic weights, brought the total number of publications accessioned up to 477.

There were 51 additions to the aeronautical collection. The growth of this collection during the past decade has been due almost entirely to the personal efforts of Mr. Paul Brockett, who has secured for it many rare and valuable works, the acquisition of which would otherwise have entailed great expense.

The cataloguing of the European Historical Series of the Watts de Peyster collection is approaching completion.

UNITED STATES NATIONAL MUSEUM

The library of the National Museum now contains 63,691 volumes and 101,057 pamphlets, making a total of 164,748 publications. Of these 1,521 volumes and 2,667 pamphlets represent the increase of the year; 14,528 parts of periodicals were entered. Owing to lack of funds, only 163 books were bound.

The number of loans reached a total of 10,577. Many more volumes were consulted without being taken out. There were borrowed 1,929 books from the Library of Congress and 130 from other libraries.

When it is realized that 6,139 of the library's loans were made to the sectional libraries, the importance of the latter will become readily apparent. The sectional libraries maintained are as follows:

Administration.
American archeology.
Anthropology.
Birds.
Botany.
Echinoderms.
Editor's office.
Ethnology.
Fishes.
Foods.
Geology.
Graphic arts.
History.
Insects.
Invertebrate paleontology.
Mammals.
Marine invertebrates.
Mechanical technology.
Medicine.
Minerals.
Mineral technology.
Mollusks..
Old World archeology.
Paleobotany.
Photography.
Physical anthropology.
Property clerk's office.
Reptiles and batrachians.
Superintendent's office.
Taxidermy.
Textiles.
Vertebrate paleontology.
War library.
Wood technology.

The sectional libraries are under the immediate custody of members of the administrative and scientific staffs, to whom the Museum is also indebted for many valuable gifts to the library and timely suggestions for the increase of its collections in the fields listed above. Among the donors for the present year should be men-

tioned Messrs. Paul Bartsch, R. S. Bassler, J. E. Benedict, A. G. Boving, Austin H. Clark, F. W. Clarke, W. H. Dall, C. T. Greene, O. P. Hay, W. H. Holmes, Aleš Hrdlička, E. W. Keyser, W. R. Maxon, G. S. Miller, A. J. Olmsted, C. W. Richmond, S. A. Rohwer, B. H. Swales, and Charles D. Walcott. The gifts of Doctor Dall to the sectional library of mollusks numbered 167 titles. Through the efforts of Doctor Bassler, the Museum has been fortunate in securing the library of the late Edgar E. Teller, paleontologist, of Buffalo, N. Y. The books were received shortly before the close of the fiscal year.

The number of cards added to the subject catalogue was 2,810.

OTHER BRANCH LIBRARIES

The branch libraries at the Astrophysical Observatory, the National Zoological Park, the National Gallery of Art, and the Freer Gallery of Art received a number of accessions during the year. The activities of the library of the Bureau of American Ethnology are covered in the report of the chief of that bureau.

SUMMARY OF RECEIPTS AND ACCESSIONS

The number of pieces of mail received during the year was 28,783, of which 7,321 publications were Government documents, and were sent to the Library of Congress, in accordance with the established practice. Additions to the library, as shown by the accession records, are given below.

Library	Volumes	Other publications	Total
Astrophysical Observatory	89	60	149
Freer Gallery of Art	380		380
National Gallery of Art	132	226	358
National Zoological Park	16	3	19
Smithsonian deposit	4,044	4,634	8,678
United States National Museum	1,521	2,667	4,188
Smithsonian office	277	200	477
Total	6,459	7,790	14,249

Respectfully submitted.

N. P. SCUDDER,
Acting Assistant Librarian.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 10

REPORT ON PUBLICATIONS.

ıR: I have the honor to submit the following report on the pub-
tions of the Smithsonian Institution and its branches during the
r ending June 30, 1924:

'he Institution proper published during the year 13 papers in the
es of Miscellaneous Collections, and 1 special publication. The
reau of American Ethnology published 3 bulletins and a list of
publications of the bureau. The United States National Museum
ılished 1 annual report, 1 volume of proceedings, 3 complete bul-
ns, 4 parts of bulletins, 4 parts of volumes in the series Contribu-
ıs from the United States National Herbarium, and 39 separates
n the proceedings.

)f these publications there were distributed during the year
.385 copies, which includes 407 volumes and separates of the
ithsonian Contributions to Knowledge, 25,937 volumes and sep-
tes of the Smithsonian Miscellaneous Collections, 19,085 volumes
separates of the Smithsonian annual reports, 3,743 Smithsonian
:ial publications, 78,734 volumes and separates of the various
es of the National Museum publications, 13,974 publications of
Bureau of American Ethnology, 78 publications of the National
lery of Art, 65 volumes of the Annals of the Astrophysical Ob-
'atory, 35 reports on the Harriman Alaska Expedition, 1,275 re-
ts of the American Historical Association, and 52 publications
:ented to but not issued directly by the Smithsonian Institution
ts branches.

SMITHSONIAN MISCELLANEOUS COLLECTIONS

f the Smithsonian Miscellaneous Collections, volume 67, 1 paper
issued; volume 71, 1 paper; volume 73, 1 paper; volume 75, 1
er; volume 76, 9 papers; in all, 13 papers, as follows:

VOLUME 67

). 9. Cambrian Geology and Paleontology. IV. No. 9. Cambrian and
kian Brachiopoda, Ozarkian Cephalopoda and Notostraca. By Charles
Walcott. June 3, 1924. Pp. 477–554; pls. 106–126. (Publ. 2753.)

VOLUME 71

. 1. Smithsonian Physical Tables. Second reprint of seventh revised edi-
November 28, 1923. 458 pp. (Publ. 2539.)

VOLUME 73

No. 2. Opinions Rendered by the International Commission on Zoological Nomenclature. Opinions 78 to 81. February 9, 1924. 32 pp. (Publ. 2747.)

VOLUME 75

No. 1. Cambrian Geology and Paleontology. V. No. 1. Geological Formations of Beaverfoot-Brisco-Stanford Range, British Columbia, Canada. By Charles D. Walcott. June 28, 1924. Pp. 1–61, pls. 1–8, text figs. 1–11. (Publ. 2756.)

VOLUME 76

No. 2. History of Electric Light. By Henry Schroeder. August 15, 1923. 95 pp., 97 illus. (Publ. 2717.)

No. 3. On the Fossil Crinoid Family Catillocrinidae. By Frank Springer. August 3, 1923. 41 pp., 5 pls. (Publ. 2718.)

No. 4. Report on Cooperative Educational and Research Work Carried on by the Smithsonian Institution and its branches. July 28, 1923. 30 pp. (Publ. 2719.)

No. 5. The Telescoping of the Cetacean Skull. By Gerrit S. Miller, jr. August 31, 1923. 70 pp., 8 pls. (Publ. 2720.)

No. 6. Descriptions of New East Indian Birds of the Families Turdidae, Sylviidae, Pycnonotidae, and Muscicapidae. By Harry C. Oberholser. July 16, 1923. 9 pp. (Publ. 2721.)

No. 7. Description of an Apparently New Toothed Cetacean from South Carolina. By Remington Kellogg. July 25, 1923. 7 pp., 2 pls. (Publ. 2723.)

No. 8. Additional Designs on Prehistoric Pottery. By J. Walter Fewkes, Chief, Bureau of American Ethnology. January 22, 1924. 46 pp., 101 text figs. (Publ. 2748.)

No. 9. The Brightness of Lunar Eclipses, 1860–1922. By Willard J. Fisher. February 18, 1924. 61 pp. (Publ. 2751.)

No. 10. Explorations and Field Work of the Smithsonian Institution in 1923. March 31, 1924. 128 pp., 123 text figs. (Publ. 2752.)

SMITHSONIAN ANNUAL REPORTS

Report for 1922.—The Annual Report of the Board of Regents for 1922 was still in press at the close of the fiscal year. The general appendix to this report contains the following articles:

Who will promote science? by C. G. Abbot.
Recent discoveries and theories relating to the structure of matter, by Karl Taylor Compton.
The architecture of atoms and a universe built of atoms, by C. G. Abbot.
Aeronautic research, by Joseph S. Ames.
Photosynthesis and the possible use of solar energy, by H. A. Spoehr.
Fogs and clouds, by W. J. Humphreys.
Some aspects of the use of the annual rings of trees in climatic study, by Prof. A. E. Douglass.
The age of the earth, by T. C. Chamberlin and others.
How deep is the ocean? by C. G. Abbot.
Two decades of genetic progress, by E. M. East.
Observations on a Montana beaver canal, by S. Stillman Berry.

The Republic of Salvador, by Paul C. Standley.
The tent caterpillar, by R. E. Snodgrass.
The life history and habits of the solitary wasp, *Philanthus gibbosus*, by Edward G. Reinhard.
The use of idols in Hopi worship, by J. Walter Fewkes.
Two Chaco Canyon pit houses, by Neil M. Judd.
Collections of Old World archeology in the United States National Museum, by I. M. Casanowicz.
The "Shake Religion" of Puget Sound, by T. T. Waterman.
Excavations at Askalon, by Prof. J. Garstang.
Rational efforts at home making, by F. H. Newell.
Ideals of the telephone service, by John J. Carty.

Report for 1923.—The report of the executive committee and proceedings of the Board of Regents of the Institution, and the report of the secretary, both forming parts of the annual report of the Board of Regents to Congress, were issued in pamphlet form in December, 1923.

Report of the executive committee and proceedings of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1923. 13 pp. (Publ. 2750.)
Report of the Secretary of the Smithsonian Institution for year ending June 30, 1923. 125 pp. (Publ. 2749.)

The general appendix to this report, which was in press at the close of the year, contains the following papers:

The constitution and evolution of the stars, by Henry Norris Russell.
The sun and sunspots, 1820–1920, by E. Walter Maunder.
Joining the electric wave and heat wave spectra, by E. F. Nichols and J. D. Tear.
The possibilities of instrumental development, by George E. Hale.
The borderland of astronomy and geology, by Prof. A. S. Eddington.
Atmospheric nitrogen fixation, by Eric A. Lof.
The place of proteins in the diet in the light of the newer knowledge of nutrition, by H. H. Mitchell.
The story of the production and uses of ductile tantalum, by Clarence W. Balke.
The composition of the earth's interior, by L. H. Adams and N. L. Williamson.
Diamond-bearing peridotite in Pike County, Ark., by H. D. Miser and C. S. Ross.
Recent progress and trends in vertebrate paleontology, by W. D. Matthew.
Animals in the National Zoological Park, by N. Hollister.
The burrowing rodents of California as agents in soil formation, by Joseph Grinnell.
The natural history of China, by A. de C. Sowerby.
Life in the ocean, by Austin H. Clark.
A study of the flight of sea gulls, by R. C. Miller.
Insect musicians and their instruments, by R. E. Snodgrass.
The gardens of ancient Mexico, by Mrs. Zelia Nuttall.
A new national monument (Hovenweep), by J. Walter Fewkes.
The genesis of the American Indian, by A. Hrdlička.
Ruined cities of Palestine, east and west of the Jordan, by Arthur W. Sutton.

The anthropological work of Prince Albert 1st of Monaco and recent progress in human paleontology in France, by Marcellin Boule.
The utilization of volcanic steam in Italy.
Proposed tidal hydroelectric power development of Petitcodiac and Memramcook Rivers, by W. Rupert Turnbull.
Sir James Dewar, by Sir James Crichton-Browne.
J. C. Kapteyn, by A. Van Maanen.
Julius Von Hann, by C. G. S.

SPECIAL PUBLICATION

The following special publication was issued during the year:

Classified List of Smithsonian Publications Available for Distribution, March 1, 1924. 80 pp. (Publ. 2755.)

PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM

The publications of the National Museum are: (*a*) The annual report, (*b*) the Proceedings of the United States National Museum, and (*c*) the Bulletin of the United States National Museum, which includes the contributions from the United States National Herbarium. The editorship of these publications is vested in Dr. Marcus Benjamin.

During the year ending June 30, 1924, the Museum published 1 annual report, 1 volume of proceedings, 3 complete bulletins, 4 parts of bulletins, 4 parts of volumes in the series Contributions from the United States National Herbarium, and 39 separates from the proceedings.

The issues of the bulletins were as follows:

Bulletin 99, East African Mammals in the United States National Museum, Part III. Primates, Artiodactyla, Perissodactyla, Proboscidea, and Hyracoidea. By N. Hollister.
Bulletin 100. Contributions to the Biology of the Philippine Archipelago and Adjacent Regions. Volume 1, part 10. The Polyclad Turbellarians from the Philippine Islands. By Tokio Kaburaki.
Bulletin 104. The Foraminifera of the Atlantic Ocean. Part 4. Lagenidae. By Joseph Augustine Cushman.
Bulletin 104, The Foraminifera of the Atlantic Ocean. Part 5. Chilostomellidae and Globigerinidae. By Joseph Augustine Cushman.
Bulletin 125, North American Later Tertiary and Quaternary Bryozoa. By Ferdinand Canu and Ray S. Bassler.
Bulletin 127, Catalogue of the Watercraft Collection in the United States National Museum. By Carl W. Mitman.
Bulletin 128, List of North American Recent Mammals, 1923. By Gerrit S. Miller, jr.

Of the separate papers of the Contributions from the United States National Herbarium the following were issued:

Volume 22, part 7. The North American Species of Aristida. By A. S. Hitchcock.

Volume 22, part 8. New American Asteraceae. By S. F. Blake.
Volume 23, part 3. Trees and Shrubs of Mexico. (Oxalidaceae-Turneraceae.) By Paul C. Standley.
Volume 24, part 5. Economic Fruit-bearing Plants of Ecuador. By Wilson Popenoe.

Of the separates from the proceedings 11 were from volume 63, 19 from volume 64, and 9 from volume 65.

PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY

The editorial work of the Bureau of American Ethnology is under the direction of Mr. Stanley Searles, editor. During the year, there were published three bulletins and a list of publications of the bureau, as follows:

Bulletin 79. Blood Revenge, War, and Victory Feasts among the Jibaro Indians of Eastern Ecuador (Karsten). VII, 94 pp., 10 pls.
Bulletin 80. Mandan and Hidatsa Music (Densmore). XX, 192 pp., 19 pls., 6 figs.
Bulletin 81. Excavations in the Chama Valley, New Mexico (Jeancon). IX, 80 pp., 65 pls., 38 figs.
List of Publications of the Bureau of American Ethnology. 45 pp.

At the close of the year there were in press or in preparation five annual reports and two bulletins, as follows:

Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians (Roth).
Thirty-ninth Annual Report. Accompanying papers: The Osage Tribe: The Rite of Vigil (La Flesche).
Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox Indian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society Known as "Those Who Worship the Little Spotted Buffalo"; The Traditional Origin of the Fox Society Known as "The Singing Around Rite." (Michelson.)
Forty-first Annual Report. Accompanying paper: Salish Basketry (Boas).
Forty-second Annual Report. Accompanying paper: Social Organization and Social Usages of the Indians of the Creek Confederacy (Swanton).
Bulletin 78. Handbook of the Indians of California (Kroeber).
Bulletin 82. Fewkes and Gordon Groups of Mounds in Middle Tennessee (Myer).

REPORT OF THE AMERICAN HISTORICAL ASSOCIATION

The annual reports of the American Historical Association are transmitted by the association to the Secretary of the Smithsonian Institution and are communicated by him to Congress as provided by the act of incorporation of the association.

Volume I of the Annual Report for 1919 and the supplemental volume to the report for 1920, entitled "Writings in American

History," were issued during the year. Volume II of the 1919 report, the reports for 1920 and 1921, and the supplemental volumes to the reports for 1921 and 1922 were in press at the close of the year.

REPORT OF THE NATIONAL SOCIETY, DAUGHTERS OF THE AMERICAN REVOLUTION

The manuscript of the Twenty-sixth Annual Report of the National Society, Daughters of the American Revolution, was transmitted to Congress, in accordance with the law, on January 19, 1924.

SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION

The editor has continued to serve as secretary of the Smithsonian advisory committee on printing and publication, to which are referred all manuscripts offered to the Institution and its branches for publication. The committee also makes recommendations to the secretary on matters relating to publication policy and economy in printing. Several recommendations were made during the year with a view to conserving as far as possible the inadequate amounts at present available to the Institution and its branches for printing and binding. Nine meetings were held during the year and 100 manuscripts acted upon.

Respectfully submitted.

W. P. TRUE, *Editor.*

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

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Respectfully submitted.

W. P. TRUE, *Editor.*

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

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REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1925

(Publication 2834)

WASHINGTON
GOVERNMENT PRINTING OFFICE
1925

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THE SMITHSONIAN INSTITUTION

June 30, 1925

residing officer ex officio.—CALVIN COOLIDGE, President of the United States.

hancellor.—WILLIAM HOWARD TAFT, Chief Justice of the United States.

lembers of the Institution:
CALVIN COOLIDGE, President of the United States.
CHARLES G. DAWES, Vice President of the United States.
WILLIAM HOWARD TAFT, Chief Justice of the United States.
FRANK B. KELLOGG, Secretary of State.
ANDREW W. MELLON, Secretary of the Treasury.
JOHN WINGATE WEEKS, Secretary of War.
JOHN G. SARGENT, Attorney General.
HARRY S. NEW, Postmaster General.
CURTIS D. WILBUR, Secretary of the Navy.
HUBERT WORK, Secretary of the Interior.
WILLIAM M. JARDINE, Secretary of Agriculture.
HERBERT CLARK HOOVER, Secretary of Commerce.
JAMES JOHN DAVIS, Secretary of Labor.

egents of the Institution:
WILLIAM HOWARD TAFT, Chief Justice of the United States, Chancellor.
CHARLES G. DAWES, Vice President of the United States.
REED SMOOT, Member of the Senate.
GEORGE WHARTON PEPPER, Member of the Senate.
WOODBRIDGE N. FERRIS, Member of the Senate.
ALBERT JOHNSON, Member of the House of Representatives.
R. WALTON MOORE, Member of the House of Representatives.
WALTER H. NEWTON, Member of the House of Representatives.
GEORGE GRAY, citizen of Delaware.
CHARLES F. CHOATE, Jr., citizen of Massachusetts.
HENRY WHITE, citizen of Washington, D. C.
ROBERT S. BROOKINGS, citizen of Missouri.
IRWIN B. LAUGHLIN, citizen of Pennsylvania.
FREDERIC A. DELANO, citizen of Washington, D. C.

xecutive committee.—GEORGE GRAY, HENRY WHITE, FREDERIC A. DELANO.
ecretary of the Institution.—CHARLES D. WALCOTT.
ssistant Secretary.—C. G. ABBOT.
ssistant Secretary.—ALEXANDER WETMORE.
hief clerk.—HARRY W. DORSEY.
ccounting and disbursing agent.—N. W. DORSEY.
ditor.—W. P. TRUE.
Librarian.—WILLIAM L. CORBIN.
ppointment clerk.—JAMES G. TRAYLOR.
roperty clerk.—J. H. HILL.

NATIONAL MUSEUM

Keeper ex officio.—CHARLES D. WALCOTT, Secretary of the Smithsonian Institution.

Assistant Secretary (in charge).—ALEXANDER WETMORE.

Administrative assistant to the Secretary.—W. DE C. RAVENEL.

Head curators.—WALTER HOUGH, LEONHARD STEJNEGER, GEORGE P. MERRILL.

Curators.—PAUL BARTSCH, R. S. BASSLER, T. T. BELOTE, AUSTIN H. CLARK, F. W. CLARKE, F. V. COVILLE, W. H. DALL, WALTER HOUGH, L. O. HOWARD, ALES HRDLIČKA, NEIL M. JUDD, FREDERICK L. LEWTON, GEORGE P. MERRILL, GERRIT S. MILLER, JR., CARL W. MITMAN, ROBERT RIDGWAY, WALDO L. SCHMITT, LEONHARD STEJNEGER.

Associate curators.—J. M. ALDRICH, C. W. GILMORE, W. R. MAXON, CHARLES W. RICHMOND, J. N. ROSE, DAVID WHITE.

Chief of correspondence and documents.—H. S. BRYANT.

Disbursing agent.—N. W. DORSEY.

Superintendent of buildings and labor.—J. S. GOLDSMITH.

Editor.—MARCUS BENJAMIN.

Photographer.—ARTHUR J. OLMSTED.

Property clerk.—W. A. KNOWLES.

Engineer.—C. R. DENMARK.

Shipper.—L. E. PERRY.

NATIONAL GALLERY OF ART

Director.—WILLIAM H. HOLMES.

FREER GALLERY OF ART

Curator.—JOHN ELLERTON LODGE.

Associate curator.—CARL WHITING BISHOP.

Assistant curator.—GRACE DUNHAM GUEST.

Associate.—KATHARINE NASH RHOADES.

Superintendent.—JOHN BUNDY.

BUREAU OF AMERICAN ETHNOLOGY

Chief.—J. WALTER FEWKES.

Ethnologists.—JOHN P. HARRINGTON, J. N. B. HEWITT, FRANCIS LA FLESCHE, TRUMAN MICHELSON, JOHN R. SWANTON.

Editor.—STANLEY SEARLES.

Librarian.—ELLA LEARY.

Illustrator.—DE LANCEY GILL.

INTERNATIONAL EXCHANGES

Assistant Secretary (in charge).—C. G. ABBOT.

Chief Clerk.—C. W. SHOEMAKER.

NATIONAL ZOOLOGICAL PARK

Superintendent.—WILLIAM M. MANN.

Assistant Superintendent.—A. B. BAKER.

ASTROPHYSICAL OBSERVATORY

Director.—C. G. ABBOT.

Aid.—F. E. FOWLE, JR.

Assistant.—L. B. ALDRICH.

REGIONAL BUREAU FOR THE UNITED STATES, INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

Assistant in charge.—LEONARD C. GUNNELL.

REPORT

OF THE

ECRETARY OF THE SMITHSONIAN INSTITUTION

CHARLES D. WALCOTT

FOR THE YEAR ENDING JUNE 30, 1925

---

the Board of Regents of the Smithsonian Institution:

GENTLEMEN: I have the honor to submit herewith the customary nual report showing the activities and condition of the Smithıian Institution and the Government bureaus under its administive charge during the fiscal year ending June 30, 1925. The first pages of the report contain an account of the affairs of the Instiion, and in appendixes 1 to 10 are given more detailed summaries the operations of the United States National Museum, the Nanal Gallery of Art, the Freer Gallery of Art, the Bureau of nerican Ethnology, the International Exchanges, the National ological Park, the Astrophysical Observatory, the United States gional Bureau of the International Catalogue of Scientific Literare, the Smithsonian Library, and of the publications issued under e direction of the Institution.

THE SMITHSONIAN INSTITUTION

THE ESTABLISHMENT

The Smithsonian Institution was created by act of Congress in 46, according to the terms of the will of James Smithson, of Engnd, who in 1826 bequeathed his property to the United States of merica, "to found at Washington, under the name of the Smithnian Institution, an establishment for the increase and diffusion of owledge among men." In receiving the property and accepting e trust, Congress determined that the Federal Government was thout authority to administer the trust directly, and therefore nstituted an "establishment" whose statutory members are "the esident, the Vice President, the Chief Justice, and the heads of e executive departments."

THE BOARD OF REGENTS

The affairs of the Institution are administered by a Board of Regents whose membership consists of "the Vice President, the Chief Justice, three Members of the Senate, and three Members of the House of Representatives, together with six other persons other than Members of Congress, two of whom shall be resident in the city of Washington, and the other four shall be inhabitants of some State, but no two of them of the same State." One of the Regents is elected chancellor by the board; in the past the selection has fallen upon the Vice President or the Chief Justice; and a suitable person is chosen by the Regents as secretary of the Institution, who is also secretary of the Board of Regents and the executive officer directly in charge of the Institution's activities.

The following changes occurred in the personnel of the board during the year: The Hon. Charles G. Dawes, as Vice President, became on March 4, 1925, a Regent of the Institution ex officio. Senator Reed Smoot, of Utah, was appointed a Regent on December 2, 1924, to succeed Senator Henry Cabot Lodge, deceased. Senator George Wharton Pepper, of Pennsylvania, was appointed a member of the board on December 3, 1924, to succeed Senator Medill McCormick, resigned. Senator Woodbridge N. Ferris, of Michigan, was appointed on March 11, 1925, to succeed Senator A. Owsley Stanley, whose term as a Regent expired with his retirement from the Senate.

The roll of Regents at the close of the fiscal year was as follows: William H. Taft, Chief Justice of the United States, chancellor; Charles G. Dawes, Vice President of the United States; members from the Senate, Reed Smoot, George Wharton Pepper, Woodbridge N. Ferris; members from the House of Representatives, Albert Johnson, R. Walton Moore, Walter H. Newton; citizen members, George Gray, Delaware; Charles F. Choate, jr., Massachusetts; Henry White, Washington, D. C.; Robert S. Brookings, Missouri; Irwin B. Laughlin, Pennsylvania; and Frederic A. Delano, Washington, D. C.

GENERAL CONSIDERATIONS

The past year marks a crisis in the affairs of the Institution. For several years past it has grown more and more difficult to stretch the income from its meager endowment sufficiently to cover the steadily increasing costs of even the limited amount of research which can be undertaken and of the administration of the eight growing Government bureaus. The cost of publishing is more than twice that of 10 years ago, which has resulted in materially decreasing the output of Smithsonian publications. The research work of the Institution is now limited practically to the paleontological

work of your secretary and the work on the solar constant of radiation under Doctor Abbot's direction, and both of these investigations are partially supported by private financial aid. The Institution has for several years been undermanned, and the ordinary running expenses are met only by the exercise of rigid economy.

This condition has been recognized for some years, and attempts have been made from time to time to increase the endowment. But during the past year the situation has become acute, and it has been realized that without a marked increase in the Institution's resources it would no longer be able to hold its place among the great research institutions of the present day, the annual income of several of which is greater than the Smithsonian's entire endowment. If allowed to go on under these circumstances, the Smithsonian, America's national scientific establishment, which was the guiding light during the formative period of scientific activity in this country, and which has been the parent of most of the present great scientific bureaus of the Government, would be relegated to second or third rank, and its world-wide reputation as a center of scientific effort in America would rapidly diminish.

With a definite realization of these facts, the administration of the Institution has concentrated during the year upon a direct effort to increase its resources, and by the close of the year several plans were under way and one definite step had been taken toward that end. An agreement was entered into with the William T. De Van Corporation, of New York, to issue a series of popular scientific books, to be known as the Smithsonian Scientific Series, a project similar in general plan to the Chronicles of America series, published by the Yale University Press, which proved so successful under Mr. De Van's direction. In the Smithsonian series it is intended to present in readable form, and profusely illustrated, the activities of the Institution and the bureaus under its direction in many branches of science. The series will consist of 20 volumes, and the following tentative titles of a few will indicate their nature:

Sun-Rays in the Welfare of Man.
Man's Origin and Development.
Gems, Meteorites, and Stones.
North American Indians.
The Study of Our Seas.
Birds and Their Ways.

The preparation of manuscripts was well under way at the close of the year, and it is hoped that before very long the sale of these books will add materially to the Institution's annual income. Two other projects, each holding promise of a large increase of endowment, were under consideration, but final action had not been taken by June 30, and their discussion at this time would be premature.

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However, it is believed that as a result of the concerted effort of the administration the outlook for the future is brighter regarding the possibility of increased resources for research and publication.

FINANCES

The permanent investments of the Institution consist of the following:

Deposited in the Treasury of the United States $1,000,000.00

CONSOLIDATED FUND

Miscellaneous securities, etc., either purchased or acquired by gift; cost or value at date acquired 213,386.50

Charles D. and Mary Vaux Walcott research fund, stock (gift); value 11,520.00

The sums invested for each specific fund or securities, etc., acquired by gift are described as follows:

Fund	United States Treasury	Consolidated fund	Walcott research fund	Total
Avery fund	$14,000.00	$32,669.55		$46,669.55
Virginia Purdy Bacon fund		62,272.93		62,272.93
Lucy H. Baird fund		1,528.09		1,528.09
Chamberlain fund		35,000.00		35,000.00
Habel fund	500.00			500.00
Hamilton fund	2,500.00	500.00		3,000.00
Caroline Henry fund		1,223.33		1,223.33
Hodgkins fund, general	116,000.00	37,275.00		153,275.00
Hodgkins fund, specific	100,000.00			100,000.00
Bruce Hughes fund		13,839.90		13,839.90
Morris Loeb fund		5,814.00		5,814.00
Lucy T. and George W. Poore fund	26,670.00	14,183.14		40,853.14
Addison T. Reid fund	11,000.00	6,639.16		17,639.16
Rhees fund	590.00	357.34		947.34
George H. Sanford fund	1,100.00	615.32		1,715.32
Smithson fund	727,640.00	1,468.74		729,108.74
Charles D. and Mary Vaux Walcott research fund			$11,520.00	11,520.00
Total	1,000,000.00	213,386.50	11,520.00	1,224,906.50

The Institution gratefully acknowledges gifts from the following donors:

Dr. William L. Abbott, for botanical expedition to Haiti.

The Buffalo Society of Natural Sciences, for expedition to Southern Asia, Java, Australia, and Africa (Hrdlička).

National Academy of Sciences, for researches in paleontology.

Research Corporation, for research work.

Dr. Charles W. Richmond and Dr. William Schaus, for collecting expedition in China.

Mr. John A. Roebling, for solar researches, etc.

Mr. B. H. Swales, for purchase of specimens.

The Institution has also received contributions from the following friends for the funds as listed below:

General endowment fund: Miss Anne C. Hanson, Mr. R. B. Miller, Mr. R. S. Poor, Prof. M. V. Walker and Mr. Hans Wilkins.

Endowment campaign expense fund: Mr. Milton E. Ailes, Mr. Charles F. Choate, Jr., Mr. Charles C. Glover, Mr. Irwin B. Laughlin, and the Hon. William Howard Taft.

Smithsonian Scientific Series: Mrs. Martha W. Bacon, Mr. Edward H. Harkness, Mr. Clarence H. Mackay, the Radio Corporation of America, and Mr. Samuel Rea.

Freer Gallery of Art.—The invested funds of the Freer bequest are classified as follows:

Court and grounds fund	$278,825.50
Court and grounds, maintenance fund	69,683.75
Curator's fund	278,825.50
Residuary legacy	2,676,232.75
Sinking fund	222,658.75
Total	3,526,226.25

The practice of depositing on time, in local trust companies and banks, such revenues as may be spared temporarily has been continued during the past year, and interest on these deposits has amounted to $1,610.15. The income during the year for current expenses, consisting of interest on permanent investments and other miscellaneous sources, amounted to $62,507.06. Revenues and principal of funds for specific purposes, except the Freer bequest, amounted to $148,252.88. Revenues on account of Freer bequest amounted to $231,073.64, aggregating a total of $441,833.58.

The disbursements, described more fully in the annual report of the executive committee, were classed as follows: General objects of the Institution, $59,921.20; for specific purposes (except the Freer bequest), $128,334.53; and expenditures pertaining to the Charles L. Freer bequest, $184,190.26. The balance on hand on June 30, 1925, was $171,952.75.

The following appropriations were made by Congress for the Government bureaus under the administrative charge of the Smithsonian Institution for the fiscal year 1925:

International exchanges		$49,550.00
American ethnology		57,160.00
International Catalogue of Scientific Literature		8,861.66
Astrophysical Observatory		21,580.00
Additional assistant secretary		6,000.00
Additional fire protection		8,500.00
National Museum:		
Furniture and fixtures	$21,800.00	
Heating and lighting	77,560.00	
Preservation of collections	434,482.00	
Building repairs	11,000.00	
Books	2,000.00	
Postage	450.00	
		547,292.00
National Gallery of Art		20,158.00
National Zoological Park		151,487.00
Printing and binding		90,000.00
Total		960,588.66

RESEARCHES AND EXPLORATIONS

An important part of the Institution's work in increasing scientific knowledge is the exploration of regions imperfectly known to science. Although the limited funds of the Institution sharply restrict the number of expeditions which it is able to put in the field, nevertheless it is often found mutually advantageous to cooperate with other agencies in field work, and the institution thus has an interest in a considerable number of expeditions each year. Many of them are conducted under the direct supervision of the heads of several of the bureaus under the Institution, and accounts of these will be found in the reports appended hereto on the National Museum, the Bureau of American Ethnology, and the Astrophysical Observatory. A few of the expeditions will here be described briefly in order to give an indication of the nature of the work undertaken.

GEOLOGICAL EXPLORATIONS IN THE CANADIAN ROCKIES

During the field season of 1924 your secretary carried on his usual geological work in the Canadian Rocky Mountains, with the intention of completing the reconnaissance begun some years ago of the pre-Devonian formations north of the Bow Valley. The weather was unusually unfavorable, and on forty-two days out of the season, it was very difficult and sometimes impossible to carry on the field-work. The chief problem attacked was the determination of the proper classification of the great Lyell limestones. In order to solve this it was necessary to find fossils in them, and during the past six seasons all such attempts were unsuccessful.

A section was measured from Fossil Mountain, situated northeast of Lake Louise station on the Canadian Pacific Railway, eastward into Oyster Mountain, the main north and south ridge of which was found to be formed of the Lyell limestones. Two glacial cirques, named Cotton Grass and Tilted Mountain, cut deeply into this ridge, and in these the base of the Lyell formation was uncovered, as well as the shales and oolitic limestones of the underlying Bosworth formation. The brook running out of the glacial lake in the bottom of the southern cirque was followed over the ledges of Lyell limestone westward to Tilted Mountain Falls, where it drops into the Canyon valley of upper Baker Creek. Everywhere the hard, unfossiliferous light gray limestone was encountered, except near the edge of the cliffs above and east of the falls, where long narrow strips covered with grass and trees occur between the north and south ledges. An approach was made from the southern bank of the brook, and on a rounded, glaciated ridge of the gray magnesian Lyell limestone there was found, interbedded in the Lyell, an outcrop of thin layers of a bluish-gray limestone which contained frag-

ients of Upper Cambrian trilobites. The next day these layers ere traced back to the brook, and a little lower in the section we ound two bands of shale and bluish-gray limestone which contained ossils. The lower of the two contained many fragments of trilo-ites, which were later identified as closely related to Upper Cam-rian Franconia trilobites from Wisconsin, and the upper band ontained fossils of the same type as the fauna of the St. Lawrence ember of the Trempeauleau formation of Wisconsin. Thus after search occupying a portion of several field seasons, fossils were ound which definitely located the Lyell limestones as of Upper Cambrian age.

After the Lyell problem was definitely settled, further collections f fossils were made in the Ozarkian upper Mons limestones of ossil Mountain, and later in the Mons formations of Wild Flower anyon, which heads on Johnston Creek Pass.

During the past eight seasons considerable progress has been nade in the understanding of the pre-Devonian geological forma-ions and their faunas in the Canadian Rocky Mountains, but much emains to be done, particularly in the region between the Canadian acific Railway and the Arctic Ocean.

ZOOLOGICAL EXPLORATIONS IN WESTERN CHINA

In my last report mention was made of the tragic ending of the nstitution's collecting expedition in China conducted under the uspices of Dr. W. L. Abbott. Mr. Charles M. Hoy, in charge of he work, following a series of misfortunes, was stricken with a evere case of appendicitis, and died shortly after. In order that Hoy's work might be continued, his collecting outfit was transferred o the Rev. David C. Graham, who for a number of years has col-ected zoological material in the vicinity of Suifu for the National Museum. In 1923 he had carried out very successful collecting perations in the region about Tatsienlu, to the northwest of Suifu, nd in May, 1924, plans were completed for an expedition to Song-an, in the northern part of the Province of Szechwan, using Hoy's utfit.

The distance from Suifu to Songpan was about 400 miles, and in rder to keep down expenses Mr. Graham covered most of this istance on foot. His party, including carriers, skinners, and other elpers, reached Songpan on July 14, after a strenuous journey of 2 days. In September Mr. Graham wrote as follows:

> The Songpan trip has been taken, and we are safely at Suifu with 50 boxes f specimens, most of which are about ready to be mailed by parcel post.
>
> This has been a harder and rougher trip than the one to Tatsienlu or any ther previous trip. It is much harder to secure food and other necessities round Songpan than at Tatsienlu. There were times when we could pur-

chase no fruit, vegetables, eggs, or meat. At Songpan it was impossible to go west or north, where large mammals are found in abundance, so that the only place we could go was east to the Yellow Dragon Gorge. Even there we had to have an escort of six Chinese soldiers and had of course to pay all their expenses. * * *

The reason we could not go north of Songpan or west of that place was that the Bolotsi aborigines are so savage and so inclined to murder and brigandage that the Chinese can not control them and are afraid of them. and the officials could not protect us in those regions. Just before we returned from Songpan the Bolotsis attacked a company of Chinese soldiers, killed several of their number, stole several rifles, and drove the scared and defeated soldiers back to their barracks. I have not heard that the Chinese have dared to go into the Bolotsi country with a punitive expedition.

The catch of mammals is not large. We are very sorry about this. It is due primarily to the fact that the mammal-catching districts around Songpan were closed to us. Yellow Dragon Gorge was a fine place for birds and insects, but a great festival had just been held there, in which aborigine and Chinese hunters from all directions had joined in the chase, and woodcutters were busy in the woods cutting timber for the new temples that are being constructed. The mammals had been scared away.

Mr. Graham also sent native collectors out to work in other regions, and regarding their work he says:

This year's catch is bigger than that of last year. There are 50 boxes of specimens on hand, and I expect to send them off by parcel post as early as possible. Besides the 50 boxes just mentioned, there is the entire catch of the netter Ho for at least three months, who has been collecting about Beh Luh Din, Chengtu, and Kuanshien during the summer, and specimens now being secured by two collectors on Mount Omei, one at Shin Kai Si and one on the higher altitudes.

The collections resulting from the season's work include about 5,000 insects, notably two-winged flies, butterflies, and moths; 558 birds, of which at least a dozen proved to be new to the Museum collections; about 250 mollusks; and a smaller number of mammals, fishes, reptiles, and batrachians, earthworms, and plants.

BOTANICAL EXPLORATION IN PANAMA AND COSTA RICA

Mr. Paul C. Standley, associate curator of the division of plants, United States National Museum, engaged in botanical exploration during the latter part of 1923 and the first four months of 1924 in Panama and Costa Rica. The work in Panama was carried on with the cooperation of the government of the Panama Canal, and had for its purpose the collection of specimens and data for a report on the plant life of the Canal Zone which will be published later. Regarding the exploration in Panama, Mr. Standley writes:

Part of November, December, and most of January were spent in botanical exploration in and near the Zone. Nearly all parts of this area were visited, and 7,000 numbers of plants were obtained, represented by about twice as many specimens. These collections are now being studied and have been found to contain a number of species new to science, besides many not collected previously in the area.

The vegetation of the Zone is typical of that existing in Central America at low elevations, but it is here possible to study in close proximity the floras of the Atlantic and Pacific slopes, these floras being sharply differentiated in Central America because of differences in the climates of the two watersheds. The Pacific slope has well defined wet and dry seasons; on the Atlantic slope there is usually plentiful moisture throughout the year.

Although the original vegetation of the Isthmus of Panama has been greatly modified in many places because of long occupation by man, and especially because of operations incident to the construction and management of the canal, there remain near the canal extensive areas of virgin forest whose animal and plant life is of great interest. Advantage has been taken of this fact to establish recently a station for tropical scientific research on Barro Colorado Island in Gatun Lake, the island having been set aside for the purpose by the governor of the canal. Upon this island, largely as a result of the energy and enthusiasm of Mr. James Zetek, there has been constructed this year a laboratory building with accommodations for students, and trails have been cut to make the virgin forest, which covers several hundred acres, available for study.

From Panama Mr. Standley proceeded to Costa Rica, where he spent two and one-half months in botanical exploration and collecting. Costa Rica is, from a botanical standpoint, probably the richest part of the North American continent, and in the highland region, where a temperate rather than tropical climate prevails, the luxuriance and variety of the vegetation is extraordinary. Of the Costa Rica work, Mr. Standley reports:

The collection consists of 8,000 numbers of plants, many of which will doubtless prove to be new. Special attention was given to the orchids, of which about 1,500 numbers were obtained. These are now being studied by Mr. Oakes Ames, through whose interest the work in Costa Rica was undertaken. Of orchids Costa Rica possesses probably a larger number of species than any other portion of the American tropics of equal extent. Over 1,000 species have been reported from this small Republic, and it is certain that many more await discovery. While most Costa Rican orchids, like those of other countries, have inconspicuous flowers, some, such as the Cattleyas, are of unsurpassed beauty.

Visits were made to the Volcano of Poas, celebrated for its great crater, which contains a lake that erupts frequently; to the Volcano of Turrialba, whose forests are noted for their wealth of ferns; and to many other rich localities in the central highlands.

A short visit to the comparatively arid Pacific coast proved that the flora of this part of Costa Rica is relatively meager and uninteresting. Several visits were made to the wet lowland forests of the Atlantic watershed, where the vegetation is even more luxuriant than in the mountains and the species are almost equally numerous. Little is known of the plants of the Atlantic lowlands of Central America, although it is probable that no other region will better reward exploration.

ARCHEOLOGICAL EXPEDITION TO CHINA

An expedition to China under the joint auspices of the Freer Gallery of Art and the Museum of Fine Arts, Boston, and directed

by Mr. Carl Whiting Bishop, associate curator of the Freer Gallery, conducted successful archeological investigations at I Chou, Province of Chihli, and at various localities in the Province of Shensi. To the southwest of I Chou, which is built upon the ruins of an ancient city, Mr. Bishop discovered parts of old earthen walls of considerable size, and to the east of the city were found groups of large mounds rising from the plain. These were examined, and many fragments of pottery and tile collected on the surface of the mounds. A survey of the locality was made by airplane, in order to determine the extent and plan of the ancient site.

Although the work of this expedition commenced during the previous fiscal year, it was continued into the present year; and, as no detailed account was given in my last report, I will quote a few paragraphs from the report of the curator of the Freer Gallery upon the work at Shensi:

> In Shensi the members of the field staff visited the Western Han (206 B. C.–A. D. 25) capital of Ch'ang-an, securing sufficient data while there to make a fair reconstruction of the ancient city. In the same Province they inspected also two large mounds of the usual truncated pyramidal form, ascribed to early Han emperors; the supposed tomb of the Emperor Ch'in Shih Huang-ti (221–210 B. C.), and the tombs of the famous Emperor Han Wu Ti (140–87 B. C.) and his General Ho Ch'ü-ping. The tomb of Han Wu Ti is an unusually large one, measuring 278 yards at its base, and presents opportunities of great archeological interest, as does also that of General Ho Ch'ü-ping, where Mr. Bishop saw not only the well-known stone figure of a horse tramping on a recumbent warrior but examined also several other partially exposed stone sculptures of the early Han period. Photographs and scale plans of several of the tombs and temples in this vicinity were made.
>
> The first actual excavation work conducted by the expedition was begun in the spring of this year at Yü-ho Chên, about 17 miles west of Hsin-yang Chou, in the Province of Honan. This specific undertaking has an added significance archeologically, in that it is the first work of the kind to be conducted in China by any foreign Government in cooperation with the Chinese authorities. At Yü-ho Chên two tombs of the Han dynasty (206 B. C.–A. D. 221) were excavated; the work revealed interesting data on ancient tomb construction, and brought to light Chinese cultural objects dating from prehistoric times to the Han period. Specimens in metal, stone, and pottery were found in the tombs; chariot fittings, mirrors, and arrow points of bronze; one or two gold rings; cast-iron implements; a stone ax, and parts of stone doors and lintels; a jade chisel; slate arrow-heads, and a number of pieces of ancient pottery—some intact, some fragmentary—among them a kind of glazed pottery which, if it be of Han production, is a type hitherto scarcely known to us.
>
> In August the Yü-ho Chên finds were exhibited for one day, under Mr. Bishop's direction, at the Historical Museum in Peking; between 5,000 and 6,000 visitors attended the exhibit.
>
> In the early autumn Mr. Bishop, together with Doctor Barbour, professor of geology at Peking University, and Doctor Tegengren, a Swedish mining geologist, examined a mound at Peitaiho, on the Gulf of Chihli, which dis-

loses evidences of what Mr. Bishop believes to be a Han dynasty naval base r fortress, one of three which are said to have been built at that time, and f which two only have been located.

MARSH-DARIEN EXPEDITION

An expedition under the auspices of Mr. R. O. Marsh explored luring a part of 1924 the little-known Isthmus of Darien, in Panama. A number of men representing several institutions and various branches of science accompanied the expedition at the invi- ation of Mr. Marsh, the Smithsonian Institution being represented by Mr. John L. Baer, who was particularly interested in the anthropological phase of the work. This expedition, like that of Mr. Hoy mentioned in last year's report, had a tragic ending, so far as the Institution was concerned, for while the party was pro- ceeding up the Chucunaque River Mr. Baer was taken suddenly ll, and, although hurriedly transported to the coast, he died within a few days.

A brief report of the work of the expedition, written by the head curator of anthropology of the National Museum, reads in part as follows:

The route followed was from Balboa to San Miguel Bay, through Darien Harbor, and up the Tuyra River to the village of Real. There a change was made to smaller boats and the Rio Chucunaque ascended to Yavisa, near which a permanent camp was established. A visit was made to the Choco Indians, who occupy the middle river valleys above tidewater, and to the Cuna, who live in the higher river valleys and mountain district. The Choco have a local government, live in large, well-built community houses, and subsist on rice, bananas, plantains, corn, and yucca. They are expert fishermen, diving into deep pools and catching certain kinds of rock fish in their hands. Their religion is a form of primitive belief in the influence of good and bad spirits. Mr. Marsh observes that they are a happy, careless, childlike people, friendly if well treated, very Polynesian-like, wearing breech-cloths, but decorated with beads, silver earrings, and wrist bands, and wreaths of gay flowers.

The Cuna have a higher culture than the Choco, are monogamous, have hereditary chiefs, families have separate houses, and large houses are used for tribal meetings and ceremonies. They raise long-staple tree cotton, dye and weave cotton into cloth and hammocks, grow corn, plantains, bananas, yucca, coffee, chocolate, and sugar cane. They are adepts with the bow and arrow and blowgun.

The party proceeded up the Chucunaque River with great difficulty, owing to barriers of drift logs, at last reaching the Cunas Bravos, who were regarded as hostile. The Cunas Bravos are agriculturists and exhibit a lower degree of culture than the Cunas of the lower river. The chief of the Cunas Bravos spoke good English, having as a young man shipped at Colon on an English vessel, and in 12 years had sailed over half the world. It was at this point that John L. Baer became ill.

Activities were next transferred to the San Blas Indians, who inhabit a long stretch of the north coast of Panama. These Indians, who number approximately 40,000, have always kept aloof from the white man, realizing

that contact with other races would work their undoing. Amicable relations were established with them and many interesting specimens of their arts and industries were collected for the National Museum. The San Blas Indians have an advanced social organization, with a ruler who could perhaps be properly classed as a king. Through the San Blas, Mr. Marsh came in contact with hundreds of "white Indians" whose presence in Panama has been known for a long time but who have not been examined by scientific observers. Individuals brought by Mr. Marsh to the United States have been carefully examined and tentatively stated, before field studies go more fully into the matter, to present a form of albinism.

ADDITIONAL ASSISTANT SECRETARY

For several years there has been recognized the need of an additional assistant secretary to relieve the pressure on the Institution of administration of the eight Government bureaus, several of which have developed rapidly in recent years. This need was laid before Congress, and in the last appropriation bill provision was made for the new position. After a thorough study of the qualifications needed for the position, Dr. Alexander Wetmore was appointed on April 1, 1925, as Assistant Secretary of the Smithsonian Institution, with general supervision of the National Museum, the National Gallery of Art, and the National Zoological Park.

Doctor Wetmore graduated from Kansas State University in 1912, having specialized in biology. He carried on post-graduate studies in biology at George Washington University, receiving the degree of M. S. in 1916 and Ph. D. in 1920. Since 1910 he has served in the Biological Survey, Department of Agriculture, first as agent, then as assistant biologist, and finally as biologist, with official station at Washington, D. C.

During Doctor Wetmore's connection with the Biological Survey he conducted numerous investigations dealing with birds and mammals, and in 1923 directed the U. S. S. *Tanager* expedition which engaged in general scientific exploration of islands in the Pacific.

On November 18, 1924, he was appointed superintendent of the National Zoological Park, where he exhibited unusual administrative ability, and on April 1, 1925, he was installed in his new position.

SMITHSONIAN RADIO TALKS

In my last report there was described the beginning of a series of radio talks by the Smithsonian Institution in cooperation with station WRC of the Radio Corporation of America, as an addition to the Institution's established methods of the diffusion of knowledge. The entire matter was placed in charge of Mr. Austin H. Clark, curator of echinoderms in the National Museum, and under his able and enthusiastic direction the series of talks was a distinct success, as attested by calls and letters from many listeners.

On October 2, 1924, the series of talks was begun again, with increased scope, and between that date and May 14, 1925, twenty-eight 15-minute talks were presented to the radio audience under the auspices of the Smithsonian Institution through station WRC, four of these having been broadcast jointly with stations WJY and WJZ of New York City, thus considerably extending the audience. Ten of these talks were given by members of the staff of the Institution, the other 18 having been given by scientists representing other establishments selected by and presented under the auspices of the Smithsonian. A list of the talks given during the year follows:

SMITHSONIAN RADIO TALKS (1924–1925)

October 2, 1924. Life in the Sea. Mr. Austin H. Clark.

October 16, 1924. Wonders of the Deep Sea. Capt. Frederick B. Bassett, hydrographer of the Navy.

October 22, 1924. Curious Plants. Dr. F. V. Coville.

November 8, 1924. What the Ocean Means to Us. Lieut. Commander George E. Brandt, aid to hydrographer of the Navy.

November 13, 1924. Indian Cliff Dwellings. Dr. J. Walter Fewkes.

November 20, 1924. Living Lamps. Mr. Austin H. Clark.

December 11, 1924. The Ocean Bottom. Dr. George C. Littlehales, hydrographic engineer, Navy Department.

December 25, 1924. What Standards Mean to Us. Dr. Fay C. Brown, assistant director, Bureau of Standards.

December 30, 1924. How Trees Grow. Dr. D. T. McDougall, director, Desert Botanical Laboratory of the Carnegie Institution, Tucson, Ariz.

December 31, 1924. Why the Earth is a Magnet. Prof. W. F. G. Swann, Yale University.

January 3, 1925, Tree Rings and Climate. Dr. A. E. Douglass, University of Arizona.

January 8, 1925. The Sun and the Weather. Dr. C. G. Abbot.

January 22, 1925. The Weather. Prof. W. J. Humphreys, United States Weather Bureau.

January 29, 1925. Mysteries of Bird Migration. Dr. F. C. Lincoln, United States Biological Survey.

February 5, 1925. The Ocean's Food Resources. Mr. Lewis Radcliffe, Deputy Commissioner of Fisheries.

February 12, 1925. What Other Peoples Eat. Mr. Austin H. Clark.

February 19, 1925. What the Earth is Made Of. Dr. Henry S. Washington, Carnegie Institution.

February 26, 1925. Habits of Ants. Dr. William M. Mann, Bureau of Entomology.

March 12, 1925. Fish as Food. Mr. Lewis Radcliffe, Deputy Commissioner of Fisheries.

March 19, 1925. How Some Wasps Live. Mr. S. A. Rohwer, Bureau of Entomology.

March 26, 1925. The Work of the Coast and Geodetic Survey in Saving Life and Property at Sea. Col. E. Lester Jones, Director Coast and Geodetic Survey.

April 2, 1925. Mosquitoes and Other Bloodsucking Flies. Mr. Raymond C. Shannon, Bureau of Entomology.

April 9, 1925. Lizards and Their Kin. Miss Doris M. Cochran.

April 16, 1925. Fighting Plant Diseases by Breeding New Plants. Dr. W. A. Taylor, Chief, Bureau of Plant Industry.

April 23, 1925. Our Fisheries. Hon. Henry O'Malley, Commissioner of Fisheries.

April 30, 1925. The Geodetic Work of the United States Coast and Geodetic Survey. Col. E. Lester Jones, Director Coast and Geodetic Survey.

May 7, 1925. Chiggers, Ticks, and Fleas. Dr. H. E. Ewing, Bureau of Entomology.

May 14, 1925. Butterflies. Mr. Austin H. Clark.

This Smithsonian radio series has proved to be an excellent means of disseminating authentic scientific information, and Mr. Clark had already begun at the close of the fiscal year to arrange the program for the coming year. It is intended to increase not only the scope of the talks, but also the audience to be reached, by exchanging material with Westinghouse station WBZ, of New England.

Plans were under way also, near the close of the year, for a distinct series of radio talks on the National Zoological Park, to be presented by the superintendent of the park and others who have a special knowledge of certain groups of animals shown in the park. It is expected to begin this series in October, 1925.

PUBLICATIONS

A total of 155 volumes and pamphlets were issued during the year by the Institution and the Government bureaus under its administration. Of these, 171,865 copies were distributed, including 262 volumes and separates of the Smithsonian Contributions to Knowledge, 24,008 of the Smithsonian Miscellaneous Collections, 26,825 volumes and separates of the Smithsonian Annual Reports, 6,102 special Smithsonian publications, 104,596 volumes and separates of the various series of National Museum publications, 7,354 publications of the Bureau of American Ethnology, 68 volumes of the annals of the Astrophysical Observatory, 44 reports on the Harriman Alaska expedition, and 1,057 reports of the American Historical Association.

The publications of the Institution constitute its principal means of carrying out one of its main purposes, "the diffusion of knowledge among men." With the 11 distinct series now issued, a very wide field of readers is reached, as in addition to the technical papers, intended for use by scientists and students, a semipopular account of progress in all branches of science is presented to the general reader in the appendixes to the annual reports of the Institution. As explained in last year's report, these reports have since the war been issued over two years late. Last year, however, funds were provided to enable the Institution to bring them up to date

by issuing two reports in one year, and this has now been accomplished, the report for 1923 having been received from the printer in June, 1925, and the 1924 report promised for delivery in October, 1925. This is probably as nearly on time as the reports can be issued, owing to their complicated nature, which involves the assembling of material from foreign as well as American sources and the submitting of proof to some 30 authors in all parts of the world.

Allotments for printing.—The congressional allotments for the printing of the Smithsonian report to Congress and the various publications of the Government bureaus under the administration of the Institution were practically used up at the close of the year. The appropriation for the coming year ending June 30, 1926, totals $90,000, allotted as follows:

Annual Report to the Congress of the Board of Regents of the Smithsonian Institution	$12,500
National Museum	42,500
Bureau of American Ethnology	25,600
National Gallery of Art	1,200
International Exchanges	300
International Catalogue of Scientific Literature	100
National Zoological Park	300
Astrophysical Observatory	500
Annual Report of the American Historical Association	7,000

Committee on printing and publication.—The Smithsonian advisory committee on printing and publication considers and makes recommendations concerning all manuscripts offered for publication. It also assists in determining the publication policy of the Institution and endeavors to insure the most efficient administration of all funds for printing and binding. During the year five meetings were held and 75 manuscripts acted upon. A vacancy was created in the personnel of the committee by the death of Mr. N. Hollister, superintendent of the National Zoological Park. Dr. Alexander Wetmore, who succeeded him as superintendent of the park, also took his place on the committee. Upon Doctor Wetmore's appointment as an assistant secretary of the Institution, he in turn was succeeded on the committee by Dr. William M. Mann, the present superintendent of the park. The membership of the committee is as follows: Dr. Leonhard Stejneger (chairman), Dr. George P. Merrill, Dr. J. Walter Fewkes, Dr. William M. Mann, Dr. Marcus Benjamin, Mr. Stanley Searles, and Mr. W. P. True, secretary.

LIBRARY

During the year the most important change in the staff of the Smithsonian library was the appointment of Mr. William L. Corbin as librarian. Mr. N. P. Scudder, assistant librarian in charge of the National Museum library for the past 38 years, died May 19.

The accessions to the libraries, exclusive of those to the library of the Bureau of American Ethnology, which is reported on by the chief of the bureau, totaled 12,537. The most outstanding gift of the year was the entomological library of the late Col. Thomas L. Casey, numbering about 4,500 volumes and pamphlets, chiefly on coleoptera, which will be deposited in the section of insects of the National Museum.

The loans totaled 10,657. Special effort was made to supply requests for missing volumes or parts of volumes, and 2,009 were obtained. There were sent to the Library of Congress, 7,287 publications to be added to the Smithsonian deposit and 7,408 documents of foreign governments for the document division. Seven thousand one hundred and thirty-two volumes and pamphlets were catalogued and much general work was done on the collections, including a detailed investigation by the librarian of the needs of the library.

NATIONAL MUSEUM

By the action of the Congress in providing for the appointment of an additional assistant secretary of the Smithsonian Institution to have general supervision of the National Museum and certain other Government bureaus under administrative charge of the Institution, Dr. Alexander Wetmore was appointed to that office on April 1, 1925. The application of the reclassification act resulted in the adoption of a more just salary scale for the scientific staff, and for the first time in many years every position in the Museum personnel was filled, the salaries previously available for certain positions having been too small to attract men properly equipped to hold them. The increase of $52,396 in the Museum appropriations over last year was sufficient to cover the larger salaries, but does not allow for proper advancement for efficient service, as provided in the reclassification act. Additional funds are urgently needed for this purpose and also for the normal expansion of the Museum, including the purchase of specimens, and for use in minor explorations.

The Museum contributed during the past winter seven speakers to the series of Smithsonian radio talks, organized last year under the direction of Mr. Austin H. Clark. This new field for the dissemination of knowledge offers great possibilities.

The Loeb collection of chemical types has made splendid progress under the direction of Mr. O. E. Roberts, jr., curator, 616 new specimens having been added to the collection during the year.

The Museum received during the year 363,490 specimens, a slight increase over last year's accessions, and 1,232 additional lots of material were received for examination and report. A total of 232 duplicate specimens were distributed as gifts to educational institu

s or exchanged for specimens needed to complete collections in Museum, and 33,966 specimens were distributed as loans to spests and students for study and identification.

ıe accessions to the Museum collections in all its departments lescribed in detail in the report of the assistant secretary, Aplix 1, and only a few of the outstanding gifts will be mentioned . In the department of anthropology, the ethnological collecs were enriched by the addition of a unique series of objects illusng the material culture of the Indians of eastern Panama, reng from the Marsh-Darien expedition, and by a collection of fornia Indian baskets bequeathed by the late Miss Ella F. by, of Pasadena. In physical anthropology, a number of casts ıe remains of early man were received, including several of the ɔus Trinil man of Java, *Pithecanthropus erectus*, from Dr. ene Dubois, and also much valuable skeletal material. The dement profited especially through explorations conducted by the ɜau of American Ethnology, and by the National Geographic ety under the direction of Mr. Neil M. Judd, which resulted in able additions to the collections.

ıe most notable gift to the department of biology was the collecof coleoptera and mollusks bequeathed to the Museum by the Col. Thomas Lincoln Casey. The beetles alone in this collecare estimated at 90,000 specimens, representing 16,000 species. onderful store of rich material also has been added to the departt in the large collections presented by the National Geographic ety as the result of expeditions in China by Dr. J. F. Rock and F. R. Wulsin, which include 4,500 specimens of vertebrates and)0 plants. Additional collections from China have also been .ved from the Rev. D. C. Graham and Mr. A. de C. Sowerby.

. the department of geology, the paleontological collections have the chief beneficiaries, having received the results of your secre-'s field work for the past four years, as well as collections made Doctor Bassler, Doctor Resser, and Doctor Ulrich. The other sions have all received valuable additions, including a number ıteresting minerals contributed by Col. W. A. Roebling, and a tal of the new mineral afwillite, donated by Mr. Alpheus F. iams. One of the most interesting exhibits is a crystal ball of sual size and perfection, weighing 110 pounds and measuring inches in diameter, shown through the interest of Mr. Worces-R. Warner and the courtesy of the Fukushima Co. (Inc.), New k. This ball is said to be the largest of its kind in the world has attracted much attention from visitors.

ı the division of mechanical and mineral technology there was a ıt falling off in the number of accessions received, principally

due to a lack of exhibition and storage space. Interesting additions were made, however, in the transportation section, including one early type of automobile, a Knox car, made in 1901, presented by Mrs. Lansing Van Auken, of Watervliet, N. Y.

The division of textiles, under which are administered also wood technology, organic chemistry, foods, and medicine, received over 8,800 objects during the year, more than twice the number received last year. These included several series of industrial specimens illustrating the manufacture of rubber, sealing wax, and the preparation and dyeing of furs; samples of silk, cotton, and wool fabrics for the textile collections; specimens of woods used in the furniture industry; and, for the public health exhibit models, and posters showing advances in sanitary science.

The exhibits of the division of graphic arts have been greatly improved during the past year by the addition of valuable new material and the rearrangement of the collections. Fourteen special exhibitions of prints in various media, mainly the work of contemporary artists, were held and the two traveling exhibits prepared by the division were widely circulated among the art museums and graphic art organizations of the eastern part of the country.

Among the objects of special interest added to the historical collections were a presentation sword, flags, uniforms, medals, and badges of the late Lieut. Gen. Nelson A. Miles; additional numismatic material, including 800 publications on numismatics transferred from the Treasury Department; and four portraits added to the portrait collection.

The Museum participated in a number of field expeditions, described in the report on the Museum, appended hereto, which have resulted in the addition of much valuable material in all of the departments of the Museum. The auditorium was in frequent demand by scientific and other societies and organizations for meetings and lectures. Visitors to the Natural History Building totaled 557,016; to the Arts and Industries Building, 304,858; to the Aircraft Building, 52,787; and to the Smithsonian Building, 107,342, making in all a total of 1,022,003. This is the first time in the history of the Museum that the year's attendance has exceeded 1,000,000 individuals. Five volumes and 70 separates were published as the result of Museum activities during the year, and 104,596 copies of Museum publications were distributed.

NATIONAL GALLERY OF ART

During the past year additions to the gallery collections were less than in previous years owing to the lack of exhibition space. The art works awaiting approval at the present time do not ex-

ed $100,000 in estimated value, while, with a suitable art build-
ig, it is thought that gifts and bequests to the value of a million dol-
rs or more would be received annually.

Work has been continued by Mr. Platt on the preparation of
reliminary plans for the proposed gallery building, made possible
y the raising of $10,000 by private subscription as noted in last
ear's report, and the plans could now be made ready for the begin-
ing of construction within six months. It is estimated that three
ears would be required to erect the building. The movement for
uch a building suffered a severe loss in the death of Senator Henry
abot Lodge, who was deeply interested in the national collections
f art and history. In 1924 he offered in the Senate an amend-
ient to the deficiency appropriation bill providing $7,000,000 for
gallery building to accommodate the collections not only of art
ut also those of American history now housed in the National
Iuseum.

The annual meeting of the National Gallery Commission was held
n December 9, 1924. The report of the secretary mentioned the
ollowing action on problems considered at last year's meeting:
The approval by the Board of Regents of the commission's recom-
nendation to include a division of historical architecture in the
Iational Gallery of Art; the appointment of Mr. Charles A. Platt
s architect of the proposed gallery building; and the approval
y the commission of the inclusion in the prospective gallery of
ollections of both American history and art. The question of the
cceptance of works of art by correspondence was discussed, and
t was resolved that hereafter a majority of the advisory committee
e required to examine personally all works of art offered the gal-
ery before making recommendation. Mr. Edmund C. Tarbell was
elected to fill the vacancy caused by the resignation of Mr. Edwin
H. Blashfield. The annual election resulted in no changes in the
fficers or personnel of the commission for the coming year. Ap-
reciation was expressed of the activities of the American Federa-
ion of Arts and the Federation of Women's Clubs in behalf of the
roposed new art building.

Permanent accessions to the gallery during the year included seven
aintings, several pieces of sculpture, and a collection of French and
ther art objects, part of the bequest of the late Rev. Alfred Duane
ell. Several loans were accepted and about an equal number with-
rawn during the year, and five paintings belonging to the gallery
ere lent for exhibition elsewhere. Four special exhibitions were
eld during the winter and early spring, catalogues for which
ere issued by the gallery.

FREER GALLERY OF ART

The year's work in the preservation of the collection included the remounting of a considerable number of prints, bringing the total number of objects in the print collection which have been put in final condition to over 1,000. Additions to the collection included a pastel by Whistler, an Indian bronze, Indian paintings, Chinese bronzes, a Chinese painting, and Near Eastern pottery. A list of the Freer Gallery collection of paintings, pastels, drawings, prints, and copper plates by and attributed to American and European artists, together with a list of original Whistleriana, was in press at the close of the year.

Ninety books and periodicals and 127 pamphlets were added to the library. Several hundred photographs and a number of lantern slides were made and sold to persons requesting them. An increased number of requests have reached the gallery for translations of Chinese, Japanese, and Tibetan inscriptions, and for other information bearing on the work of the gallery.

The total attendance for the year was 109,862. Of this number, 431 used the study rooms to view objects not on exhibition or to consult reference works in the library.

The gallery's archeological expedition in China was still in the field at the close of the year, and a condensed report on its work will be submitted later for publication in the Smithsonian annual exploration pamphlet.

BUREAU OF AMERICAN ETHNOLOGY

The function of the Bureau of American Ethnology as defined by Congress is to conduct ethnological researches among the American Indians and the natives of Hawaii, including the excavation and preservation of archeologic remains. The results of these researches are published in technical monographs as well as in articles of a more popular character, and reliable information regarding the American Indian is thus made available for students. The aboriginal Indian culture is rapidly disappearing through contact with the white man's civilization, and when the older men of the tribes who know the rites and customs of their fathers have passed away, much of the ancient lore will be lost forever. The bureau is recording as much as possible of this material before it is too late to secure it.

An important Indian culture area is that of the southeastern United States, and the bureau has recently begun an archeological reconnoissance, so far as its resources will permit, in Florida, Alabama, Tennessee, and Mississippi. It is possible to reconstruct from

storical sources the main outlines of this Gulf culture, but much ore information is needed regarding the rituals, idols, ceremonial ›jects, and symbolism on pottery before we can form a complete ea of this interesting aboriginal culture.

Dr. J. Walter Fewkes, chief of the bureau, spent several weeks reconnoissance near Florence, Ala., where a number of interesting ıdian mounds were located which will be submerged with the cometion of the Wilson dam at Muscle Shoals. Mr. Gerard Fowke ntinued the excavation of two of these mounds, which yielded a nsiderable collection including rare copper ornaments, among the rgest known from the Tennessee Valley. Doctor Fewkes also pre-red during the year an illustrated report on a collection of archeogical objects from Youngs Canyon, near Flagstaff, Ariz., a region great importance in determining the relationship of the various lture areas of the Southwest.

During the past year Mr. Earl H. Morris, under the direction Doctor Fewkes, did necessary repair work on the famous tower the Mummy Cave House in the Canyon del Muerto, Ariz., which ll go far toward preserving what is considered one of the finest amples of aboriginal architecture in the entire Southwest.

Dr. John R. Swanton discovered further material bearing on the cial and religious life of the Creek Indians, and embodied this formation in papers now being prepared for publication. He so prepared a paper as a result of his recent study of the smaller lture centers within our present Gulf States, entitled "Culture of e Southeast" and a short report on the "Ethnology of the Chickaw," and he continued work on the now extinct Timucua language.

Dr. Truman Michelson continued his studies of the Fox Indians, anscribing and translating a number of texts relating to their stoms and beliefs. He also renewed his researches among the lgonquian tribes of Iowa, spending part of the summer in that ate.

During the year Mr. John P. Harrington continued his work on e Burton Mound Indian village situated at Santa Barbara, preıring for publication the material resulting from last year's excavaons in cooperation with the Museum of the American Indian, and rrying on additional excavations at the same site which have elded much important material. In addition, he prepared a report ı the archeology of the Santa Barbara region along both historical ıd archeological lines. Mr. Harrington also made an exhaustive udy of the language of the Tulé Indians of Panama, eight of hom were brought to Washington by Mr. R. O. Marsh in October, 924, and remained until January, 1925, thus giving him an excellent ›portunity for this investigation.

In May, 1925, Mr. J. N. B. Hewitt left Washington for Brantford, Canada, to resume his researches among the six nations, or tribes, of the Iroquois. With the aid of the two best Mohawk informants available, Mr. Hewitt made a free English translation of one of the most important of the ancient rituals, and took up the literary interpretation, revision, and textual criticism of previously recorded voluminous Iroquoian texts. An interesting resumé of this work is presented in the report of the chief of the bureau which forms Appendix 4 of this report. Mr. Hewitt also visited the Chippewa of Garden River, Canada, and the Seneca in Missouri and Oklahoma.

During the year, Mr. Francis La Flesche completed his paper on two versions of the child-naming rite of the Osage Tribe. In May Mr. La Flesche visited the Osages and remained through June working at the laborious task of properly recording the gentile personal names used by the full-blood members of the tribe and by some of the mixed bloods. Mr. J. George Wright, of the Osage Agency, cooperated in this work by giving Mr. La Flesche access to the records of his office. Mr. La Flesche collected during his stay in the region some interesting plants used as food or medicine among the Indians.

Miss Frances Densmore continued her special research on the music of the Indians during the past year, resulting in the preparation of five manuscripts comprising transcriptions of 69 songs, together with the original phonograph records and analyses of the songs, which were purchased by the bureau for future publication. Miss Densmore's manuscripts included also one on the uses by the Makah Indians of 26 plants in food, medicine, and dyes. She took advantage of the presence in Washington of the group of Tulé Indians, mentioned before in connection with Mr. Harrington's study of their language, to make a study of their music. Their favorite musical instrument was found to be the "pan pipe" of reeds, and they also used another reed instrument known as the "mouth flute" that had not before been observed in primitive music.

The publications of the bureau issued during the year consisted of two reports and one bulletin. Three other reports were in press at the close of the year. 7,354 copies of the publications of the bureau were distributed during the year.

INTERNATIONAL EXCHANGES

The total number of packages handled by the exchange service during the year was 468,731, weighing 506,164 pounds, an increase in the number of packages over last year of 8,073 and a decrease in weight of 60,943 pounds, due to the smaller size of the packages of publications received for transmission through the service.

Fifty-eight full sets of United States official documents and 40 partial sets are now sent regularly to depositories abroad. This is a reduction of one full set from last year and an addition of two partial sets. At the request of New Zealand, a partial set is now being sent to the General Assembly Library instead of a full one and the Stadtbibliothek of the Free City of Danzig has been added to the list of those receiving partial sets. The immediate exchange of the Official Journal has been entered into during the year with India and the Free City of Danzig.

A committee of experts on the international exchange of publications was called together by the committee on intellectual cooperation of the League of Nations at Geneva, July 17–19, 1924. Mr. H. W. Dorsey, chief clerk of the Institution, represented the Smithsonian on this committee. The committee recommended an additional protocol to the Brussels convention of 1886, enabling the states that are not yet parties to the convention to adhere thereto with reservations. The committee also gave consideration to various other matters looking to the improvement of the international exchange service and the extension of its activities.

NATIONAL ZOOLOGICAL PARK

I regret to have to record the death on November 3, 1924, of Mr. N. Hollister, for eight years the able superintendent of the park. Dr. Alexander Wetmore succeeded Mr. Hollister and served until April 1, 1925. On that date he was appointed an assistant secretary of the Smithsonian Institution, and Dr. William M. Mann, entomologist of the Department of Agriculture and widely known as an explorer in the interests of zoology and entomology, was appointed superintendent of the park on May 13, 1925.

The collection of animals in the park has been somewhat diminished in value during the year by a number of deaths among the older animals. This loss has been offset to a certain extent by the accession of 130 animals presented by various donors and 70 mammals and birds born or hatched in the park, but among the older stock lost were many valuable specimens that can be replaced only by purchase, and funds for this purpose are very limited. The more notable of the new gifts to the park included a splendid young male chimpanzee, from Mr. Victor J. Evans, and a Bateleur eagle, an Abyssinian falcon, and two South American stone plover from Mr. B. H. Swales.

The total number of individuals in the park collection at the close of the year was 1,620, 25 less than reported last year. The species represented, however, show an increase of 17 due to judicious selection and purchase of small species offered for sale at moderate prices.

The attendance for the past year was the highest the National Zoological Park has ever known, the number of visitors recorded reaching a total of 2,518,265.

During the year the animal warehouse, construction of which was begun last year, was completed and put into service, a double bear cage of steel was erected, and many minor repairs were made on old buildings. In many instances these, even when carefully repaired, are poorly adapted to the present needs of the park and should be replaced by new ones that would not only safely and comfortably house their inmates, but would also better accommodate the great throngs of visitors to the collections. The buildings most urgently needed are a house for birds and one for reptiles.

ASTROPHYSICAL OBSERVATORY

Much progress has been made during the year in the study of the sun and its application to weather forecasting. Through the generous assistance of Mr. John A. Roebling, the experimental forecasts by Mr. H. H. Clayton for the city of New York, based on daily telegraphic reports from the observing stations in Chile and Arizona, mentioned in last year's report, were continued. Four papers have been issued in the Smithsonian Miscellaneous Collections, reporting in detail on the results of this work. While it is still largely experimental, the forecasts have certainly indicated a moderate degree of foreknowledge. A higher degree of accuracy in the solar measurements upon which the forecasts are based will undoubtedly lead to better results, and to this end the staff of the observatory is now engaged in completely revising the methods of observing, measuring, and recording the solar radiation. The station at Harqua Hala, Ariz., has been removed to Table Mountain, Calif., to obtain better atmospheric conditions and greater convenience of access. This transfer was made possible through the aid of Mr. Roebling.

The director occupied the Mount Wilson station during the summer and autumn of 1924. He continued work on the three projects outlined in last year's report with the following results: The solar cooker was greatly improved; measurements of atmospheric ozone were made with the Fabry type of apparatus; and new devices were tried in stellar energy spectrum measurements which seem to open the way for great advances in that line.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

Attention is again called to the urgent need of financial assistance to enable the International Catalogue to resume publication of the 17 annual volumes which for so many years were depended on to

furnish references to the world's literature of science. Ever since war conditions made it necessary to suspend publication in 1921, it has been the hope that foreign political and financial conditions would improve sufficiently to enable the cooperating countries to again furnish the necessary funds through subscription as heretofore, but with the exchange rates of several of these countries now at a lower level than ever before, it seems that this hope will be futile for some time to come.

Although actual publication has ceased for the present, the organization is in no sense bankrupt, for, according to an agreement made at the Brussels Convention in 1922, the regional bureaus continue their work of assembling current bibliographical data, thus keeping the organization working, and when publication is resumed it is believed that new subscribers will purchase the back issues of the catalogue now held in storage. It would be difficult to find an object more worthy of endowment than this unique international, cooperative undertaking, for no similar enterprise has ever filled the place occupied by the catalogue and no new organization could hope to gain the official recognition held by the International Catalogue of Scientific Literature.

NECROLOGY

HENRY CABOT LODGE

Henry Cabot Lodge, United States Senator since 1893 and Regent of the Smithsonian Institution for 22 years, died November 9, 1924. Born in 1850, Mr. Lodge was admitted to the bar in 1876, and during the early part of his career served as editor of the North American Review and later of the International Review. He next served for two years as a member of the Massachusetts House of Representatives, and 1887 was elected to Congress, where he remained until 1893. In this year began his career as a United States Senator, to which office he was continually reelected until the time of his death, and the last term for which he was chosen to represent the people of Massachusetts would not have expired until 1929.

Mr. Lodge was a very influential member of the Senate, having served as Republican floor leader from 1918 until the year of his death. In addition to his political activity, he was the author of many important historical works and essays.

Through his long period of membership on the Board of Regents and his interest and active participation in the affairs of the Institution, Senator Lodge had become a valued adviser, and his loss is keenly felt by the board and the officers of the Institution.

NED HOLLISTER

Ned Hollister, superintendent of the National Zoological Park since October 1, 1916, and one of the foremost mammalogists of the world, died on November 3, 1924.

Mr. Hollister was born at Delavan, Wis., November 26, 1876, where he received his education and began the study of zoology. From 1902 to 1909 he conducted zoological field work for the United States Biological Survey in Texas, New Mexico, Alaska, British Columbia, Washington, Oregon, California, Utah, Nevada, Louisiana, and Arizona. In 1910 he began his connection with the Smithsonian Institution, being appointed assistant curator of mammals in the United States National Museum, which position he held until 1916 when he was selected for the responsible position of superintendent of the National Zoological Park.

In 1911 Mr. Hollister was a member of the Canadian Alpine Club expedition to explore the Mount Robson region of British Columbia and Alberta, and in 1912 he represented the Smithsonian Institution on the Smithsonian-Harvard expedition to the Altai Mountains, Siberia and Mongolia. The results of Mr. Hollister's scientific work have appeared in the publications of the Institution and in various technical journals for many years. Besides over 100 minor papers on zoological subjects, he was the author of a number of large works, including The Birds of Wisconsin (1903); Mammals of the Philippine Islands (1911); Mammals of the Alpine Club Expedition to Mount Robson (1913); East African Mammals in the United States National Museum (vol. 1, 1918; vol. 2, 1919; vol. 3, 1923). This last is probably Mr. Hollister's greatest contribution to science, being a complete technical account of the great collections made in East Africa by Theodore Roosevelt, Paul Rainey, and other collectors.

During Mr. Hollister's term of office as superintendent the National Zoological Park showed a steady growth and development, the collection of animals in the Park being greater in numbers and in scientific value than ever before, and the number of visitors to the park having increased steadily until it reached during the past year a total of over 2,500,000. It was largely through Mr. Hollister's efforts that Congress a few years ago provided funds for the purchase of a frontage of 625 feet at the Connecticut Avenue entrance to the park, thus insuring for the future a dignified and appropriate approach.

Mr. Hollister was a member of many scientific societies and editor of the Journal of Mammalogy.

WASHINGTON I. ADAMS

Washington I. Adams, who was connected with the Institution from 1896 until his retirement in 1924, died at Watertown, Mass., April 19, 1925. Mr. Adams came to the Institution as chief clerk of the International Exchange Service, which position he held until 1905 when he was appointed chief disbursing agent, a position he held until his retirement. Mr. Adams's duties and responsibilities were greatly increased in recent years due largely to the receipt of the Freer bequest of over $3,000,000.

NEWTON P. SCUDDER

Newton P. Scudder, assistant librarian of the National Museum, died on May 19, 1925, two months after his retirement from active service. Mr. Scudder was given an appointment as clerk in 1882 and five years later was made an assistant librarian in the Museum, which position he held until his retirement on March 9, 1925.

Mr. Scudder was born in Brooklyn, N. Y., in 1853, and graduated from Wesleyan University in 1879. His first work was with the Bureau of Fisheries, and under its auspices he made a trip to the halibut banks. As a result of this investigation two papers by him on "The Halibut Fishery, Davis Strait," and "The Salt Halibut Fishery," were published by the Bureau of Fisheries. Following this work, Mr. Scudder came to the Museum library, where he remained until his recent retirement.

Respectfully submitted.

CHARLES D. WALCOTT, *Secretary.*

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APPENDIX 1

REPORT ON THE UNITED STATES NATIONAL MUSEUM

SIR: I have the honor to submit the following report on the condition and operations of the United States National Museum for the fiscal year ended June 30, 1925.

The appropriations for the maintenance of the National Museum for the fiscal year amounted to $584,792, an increase of $52,396 over the previous year. This increase, however, is more apparent than real so far as providing additional funds for the operation of the Museum is concerned, since $44,534 of the amount represented the sum required for increase of salaries from the inauguration of the schedules authorized by the reclassification act of 1923, which became effective July 1, 1924, while subsequent reallocations of employees by the Personnel Classification Board resulted in increasing salary allotments approximately $9,000 beyond the estimated amount. It thus transpired that the amounts available for actual operating expenses were less than during the previous year. Moreover, the reclassification act had the effect of reducing the amount provided for printing and binding since increase in salaries in the Government Printing Office inaugurated under it resulted in increased cost in printing, thus reducing the production value of the sum allotted for that purpose to the Museum.

Attention has been called repeatedly in these annual reports on operation to the great disproportion between the increase in the appropriations provided for the maintenance of the Museum and the increase in the size of its collections, as well as in the quantity, scope, and importance of its exhibition and research work and its service to the public at large. Through the unselfish efforts of the personnel and the practice of the most rigid economy it has been possible until now to maintain a high degree of efficiency, but the very fact of its steady growth will curtail the usefulness of the Museum as a factor in the field of science and education unless it can be assured of sufficient funds to cover its natural and proper expansion. There is urgent need now for additional funds for operation, and for reasonable sums for the purchase of specimens and for use in minor explorations. Rich additions to the collections are received each year through specimens deposited by Government agencies or presented by private donors. Definite gaps in all lines exist, however, that may be filled only by purchase of desirable

things or by small sums spent in field work to acquire them. Specimens actually needed are obtainable usually only at long intervals and if such opportunities are allowed to pass further chance to acquire them may be remote or uncertain. Highly desirable things offered at reasonable prices are refused nearly every week. The Institution should have available moderate funds that might be used for such purposes.

Need of funds for exploration is also imperative since through this means only is it practicable to obtain data and information of importance in connection with many objects desired for the collections. Definite research on the part of experts is often required to clear up doubtful points in source or relationship of many things.

More and more each year the National Museum is approached for authentic information in a wide range of subjects not to be obtained elsewhere. Its vast collections of carefully arranged and classified specimens afford a full record of industrial, social, and esthetic progress as well as of painstaking and exhaustive research work in the natural sciences. In it are gathered the results of governmental activities and private donations aggregating many millions of dollars. The Museum collections serve as a foundation for the economic work of such great Government organizations as the Department of Agriculture, the Geological Survey, and others, and the members of the scientific staff assist materially in the work of these institutions through identification and report on the various objects with which they are concerned. To maintain its position of constantly increasing importance in the field of Government service and to fulfill its function as a truly national museum, it is absolutely necessary that adequate funds be provided for its proper maintenance. It is sincerely hoped that its needs in this direction will be recognized and provided for by suitable appropriations.

Final establishment of the salary schedules under the reclassification act brought the salaries paid to members of the scientific staff in the National Museum in most cases to a parity with those doing similar work in other departments, and has thus in large part corrected a lamentable condition in which members of the staff were paid at rates established many years ago and which in modern circumstances had become wholly inadequate. The increased salaries available have allowed the filling of several vacancies that have existed for some time and to fill which there were no suitable candidates at previous rates of pay. Adjustments in allocation in certain positions still remain to be made before the scale in force is just and equitable in all its features, as it is felt that the rates assigned in some positions do not correspond with the grades or emoluments applied to similar positions in other branches of Government service.

The financial assistance accorded to members of the scientific staff has been greatly appreciated but attention is drawn to the necessity of keeping this matter in mind so that faithful service may be further rewarded. Provision is made in the reclassification act for increase in salary to the average amount in the various grades, provided a suitable record of efficiency is maintained. Two surveys of efficiency of the entire staff have been made in accordance with regulations laid down by the Personnel Classification Board, and in further accordance with the regulations of that board the ratings assigned have been transmitted to the staff. It is highly gratifying to record that with very few exceptions these ratings have been excellent and have been of such a degree that they warrant promotion. Under existing appropriations funds for the proper advancement indicated are not available. The matter is earnestly recommended for serious consideration to the end that money may be provided to make the necessary increase. Such action has been taken in other departments and it is sincerely desired to avoid falling behind in this respect as was the case under former salary regulations.

Though not universally recognized as an element in educational activities, the National Museum fulfills a threefold function in that field. Through the care and preservation of its vast and inestimably valuable collections and their careful arrangement and classification, it affords a visual record of progress and development of our own and foreign peoples, of important advances in the history of our country, and of achievements in science, industry, and art. As a museum of research it affords opportunity to the trained specialist and to the serious student to pursue studies of all kinds with facilities not elsewhere obtainable. It is seen as a museum of education by the visiting public, who come to examine the many treasures in the exhibition halls, while through its publications, correspondence, and distribution of duplicate specimens it reaches thousands who are not so fortunate as to be able to visit its halls. It may be safely said that no textbook, work of reference, or encyclopedia of facts has been issued in this country in recent years that has not based some of its statements on information originating in the National Museum.

As a modern feature for the dissemination of knowledge may be mentioned the radio program of the Smithsonian Institution organized last year which has continued under the direction of Mr. Austin H. Clark of the Museum staff in cooperation with the broadcasting station WRC, Radio Corporation of America. In all, 28 talks, of 15 minutes each, were given during the winter, 10 being by members of the staff of the Institution, including 7 from the Museum. Four of these talks were broadcast also by stations WJY and WJZ in New York City, reaching thus a broad audience. The talks, which began October 2, 1924, and were concluded on May 14, 1925, were

delivered by 25 individual speakers. The subjects chosen came from a wide range in the field of science and proved highly popular as attested by the many letters received from listeners far and near. Some of them have been published in permanent form. Possibilities in the spread of authentic scientific information through this means are great, since in this way informational talks prepared in an interesting manner go out to an extended audience fully appreciative of what they hear. It is possible thus to present the newer facts and changing aspects of science in a manner unequaled by other means.

As was anticipated when the Loeb collection of chemical types was placed under the special charge of a paid curator, splendid progress has been made. Through the activities of Mr. O. E. Roberts, jr., the curator, and cooperation on the part of many chemists and organizations, 616 new specimens have been added to the collection during the year. The importance of such a collection is only just beginning to be realized, but the interest already taken in it by specialists in chemical research work is indicative of the important results eventually to be achieved.

COLLECTIONS

The results of the year show a most satisfactory growth in the collections, the total number of specimens received amounting to 363,490, while additional lots of material received for examination and report numbered 1,232. The number of additions exceeds slightly the very high mark attained last year, while material for report also shows a slight increase. The increases are highly gratifying and have brought a great amount of extremely valuable material to the collections.

As in previous years, duplicate specimens were distributed as gifts to educational institutions or utilized in the making of exchanges for specimens needed toward completing the collections. The material thus disposed of amounted to 23,244 specimens, of which 2,099 represent gifts. An additional lot of material, comprising 33,966 specimens, was distributed in the form of loans to specialists and students for study and identification.

The following resumé of the more important accessions received during the year is submitted by the heads of the several departments or divisions of the Museum:

Anthropology.—The department of anthropology reports a year of satisfactory progress in all lines of its activities.

In the division of ethnology there was received a unique series of objects illustrating the material culture of the Indians of eastern Panama as a result of the explorations of the Marsh-Darien expedition cooperating with the Smithsonian Institution. This collection

is regarded of such scientific interest that a special paper describing it has been prepared and submitted for publication. Another accession of particular beauty and rarity was the remainder of the collection of California Indian baskets bequeathed by the late Miss Ella F. Hubby, of Pasadena.

Among additions in American archeology may be mentioned collections from Town Creek, Ala., on the site of Wilson Dam, Muscle Shoals, and from Weeden Island, St. Petersburg, Fla., collected by Gerard Fowke and Dr. J. Walter Fewkes, respectively, and transferred from the Bureau of American Ethnology. The first of these is especially valuable, since it comes from a locality that will be covered by water when impounded by the dam.

The accessions in the division of Old World archeology include a copy of the Welsh version of the Bible from David W. Evans and numerous Egyptian and Graeco-Roman antiquities and ancient glassware loaned by Edward Sampson.

In physical anthropology there were added several casts of the remains of the famous Trinil man of Java, *Pithecanthropus erectus*, received from Dr. Eugene Dubois, who has been engaged in exhaustive studies of this highly important fossil.[1] Also there has been received from the British Museum a cast of the skull found recently at Broken Hill in Rhodesia. Other important casts represent remains of ancient man from Czechoslovakia. These will all be of great assistance in studies of ancient man. The Bureau of American Ethnology transferred skeletal material from Florida, and the National Geographic Society presented important skeletons found in excavations at Pueblo Bonito and Pueblo del Arroyo, New Mexico. The Buffalo Society of Natural Sciences donated a collection of Iroquois skeletal material collected in Erie County, N. Y.

Mr. Hugo Worch has added to the Worch collection of pianos four splendidly decorated harpsichords of the sixteen and seventeen centuries. Miss Frances Densmore completed her study of the collection of musical instruments and submitted a manuscript descriptive of it.

The ceramic collection was augmented by a collection of English porcelain and glass, gift of Mrs. Frances Roome Powers.

In art textiles, the valuable laces of the late Mrs. H. K. Porter were continued as a loan by her daughter, Miss Hegeman. By bequest of the late Miss Emily Tuckerman, all specimens belonging to her on deposit in the Museum were made a gift. The Misses Long contributed several fine specimens of embroidery and lace.

The department profited especially through explorations by the Bureau of American Ethnology, the National Geographic Society, and the Marsh-Darien expedition. Neil M. Judd, in charge of

excavations carried on under auspices of the National Geo-ıphic Society at Pueblo Bonito, remained in the field for several nths and secured excellent collections and highly important in-mation. Henry B. Collins, jr., conducted explorations at ancient lage sites in Mississippi, where valuable studies have resulted ›m intensive work in the field.

Biology.—Increase in the collections in the various divisions of s department have equaled and in some cases have excelled those :orded for the previous year. Of outstanding interest is the col-tion of coleoptera and mollusks that came to the Museum by quest of the late Col. Thomas Lincoln Casey. The beetles alone this collection are estimated at approximately 90,000 specimens ›resenting 16,000 species of which 5,000 were described by Colonel sey and are represented by the types.

The large collections presented by the National Geographic ciety as the result of expeditions in China by Dr. J. F. Rock and . F. R. Wulsin include a total of over 4,500 specimens of verte-ıtes and 68,000 plants, a wonderful store of rich material that has led greatly to the representation from that area, for, in addition a number of forms previously unknown to science, there are in the lection many species not before represented in this institution. ditional collections from China have come through the continued ›rts of Rev. D. C. Graham in western Szechwan, which have added tebrates and valuable insects. China has been further represented our accessions by material collected by A. deC. Sowerby, pre-ted through the continued interest of Col. R. S. Clark.

Mr. B. H. Swales has continued his important additions to the lections of birds by the purchase of a considerable number of cies not previously represented including a number of rarities m Madagascar. Further acquisitions through the interest of Dr. sey A. Wood have resulted in additional specimens from Fiji. . Hugh M. Smith, now in Siam, has begun presentation of uable material from a region almost unknown in our collections l has included among other things in his first sending a highly uable lot of marine invertebrates.

Valuable collections of fishes have come from the H. K. Mulford ., of Philadelphia. Certain important specimens have been pur-ıased for the collections of mollusks from the income provided that purpose by the Frances Lea Chamberlain fund.

In the exhibition halls there was installed a new group of Rocky ıuntain goats prepared from material collected by Secretary and s. C. D. Walcott; the case represents a family of four with an ›propriate background of rockwork. A number of older mounts other mammals have been replaced by material prepared by

modern methods and additions have been made to the collections exhibiting the local fauna. A second group not quite completed is that of the dik-dik, a diminutive antelope from Africa.

Geology.—Although a decrease is shown in the number of accessions and amount of material received in this department as compared with 1923–24, reference to earlier reports shows the present year to be an average one, with a total of 198 accessions, aggregating 79,674 specimens.

The paleontological collections are again the chief beneficiaries, notable among the acquisitions being the results of Secretary Walcott's field work for the past four years, as well as collections made by Doctors Bassler, Resser, and Ulrich in the summer of 1924. Gifts also materially increased the collections of invertebrate fossils, particularly those of the Mesozoic and Cenozoic periods, and one bequest added many thousands of specimens, including types.

In vertebrate paleontology the most important acquisition is a series of footprints from Permian deposits secured by Mr. C. W. Gilmore from the Hermit Trail, Grand Canyon National Park, working under the auspices of the National Park Service. Dr. J. C. Merriam, of the Carnegie Institution, of Washington, who was instrumental in perfecting the arrangements under which this material was secured, supplemented it by additional specimens taken personally. The fossil cetacean collection has also been materially increased and is now thought to be probably the largest and best preserved assemblage of these forms in any American institution.

A series of unusual forms of stalactites and stalagmites from Carlsbad Caverns, New Mexico, presented by the National Geographic Society, permitted the installation of an important addition to the exhibits showing cave phenomena.

In the field of applied geology the most important material received was that obtained by Assistant Curator Foshag while working with a United States Geological Survey field party in New Mexico. Doctor Foshag also collected much mineralogical material needed for the study collections. A few striking exhibition specimens of ores were obtained from various sources.

Col. W. A. Roebling was the chief contributor to the mineral collections, 6 accessions comprising 51 specimens being credited to him during the year. The most notable of these is a group of axinite crystals thought to be the largest of this mineral yet found.

A crystal of the new mineral afwillite, donated by Mr. Alpheus F. Williams, is of particular interest in being one of the type lot which consists of less than a pound of the material. Notable specimens for exhibition were furnished through Mr. F. L. Hess, of which a group of large wulfenite crystals from Mexico, and a mass of pink muscovite and amblygonite from New Mexico are prominent.

Through the interest of Mr. Worcester R. Warner and the courtesy of the Fukushima Co. (Inc.), New York, the department of geology has been privileged to exhibit a crystal ball of unusual size and perfection, weighing 110 pounds and measuring 13¼ inches in diameter, which is said to be the largest of its kind known. This has attracted much attention from visitors.

Exchanges have added materially to the collections in all divisions of the department, both for exhibition and study, and a few objects have been acquired by purchase. Several additions have been made to the meteorite collection, consisting chiefly of fragments of moderate size, which, while important from a scientific standpoint, add little to the exhibits. A number of gems have been added to the Isaac Lea collection through the Frances Lea Chamberlain fund.

Secretary Walcott continued his researches in British Columbia; Dr. R. S. Bassler in Tennessee, in cooperation with the geological survey of that State; Dr. C. E. Resser in the Rocky Mountain region of the United States; and Dr. W. F. Foshag was detailed to accompany a geological survey party in New Mexico. Mr. C. W. Gilmore spent some weeks in the Grand Canyon National Park, under the auspices of the National Park Service.

Work on the exhibits has been chiefly confined to cleaning and rearranging, no important changes having been made. In stratigraphic paleontology much time and effort have been consumed in expansion of the collections and in general cleaning and rearranging of the paleobotanical collections. The efforts of the force in vertebrate paleontology have been confined almost wholly to the preparation of the huge dinosaur skeleton, collected last year, with satisfactory results.

Research work has continued to the extent permitted by other duties.

Arts and industries.—Growth in this department has been satisfactory in the main though hampered in many lines by crowding. Materials for accession are selected with great care, but so much that is wholly desirable is offered that available facilities for exhibition are greatly overtaxed.

In the division of mechanical and mineral technology there was a slight falling off in the number of accessions received and a material decrease in the number of specimens catalogued during the year, due, primarily, to a lack of exhibition and storage space. This condition is aggravated more and more each year and will lead to further decrease in the rate of acceptance of objects for the collection since now choice may be made only of things urgently required.

In the transportation section one early type of automobile was received, a Knox car made in 1901, presented by Mrs. Lansing Van

Auken, Watervliet, N. Y. The signal section of the American Railway Association added to its series of specimens showing developments in railway signaling 16 objects that indicate some of the early efforts in block signaling. The Buda Co., of Harvey, Ill., presented a full-size gasoline automobile engine operated by an electric motor specially arranged for exhibition, as by pressing a button it may be put in operation, thus permitting study of many of the working parts in action. Mr. Henry Ford presented a specially prepared exhibit of the planetary transmission used in the Ford automobile. As this is one of the distinctive types of automobile transmissions it will form an interesting part of an exhibit now under way designed to illustrate the various fundamental units composing the automobile.

The Portland Cement Association, of Chicago, Ill., through its local office, presented a full-size photographic copy, suitably framed, of the original patent on Portland cement granted by King George III to Joseph Aspdin in 1824. The presentation of this interesting paper was made in the presence of about 12 officials representing various departments of the Government interested in Portland cement and was accepted on behalf of the Museum by Secretary Walcott. The framed copy now hangs in close proximity to the exhibit on Portland cement in the division of mineral technology.

The collections under the supervision of the curator of textiles, which, besides textiles, embrace wood technology, foods, animal products, organic chemistry, and medicine, were increased by many gifts and by transfer of material from other Government bureaus, amounting in all to over 8,800 objects. A statement concerning the most important of these follows:

Series of industrial specimens illustrating many branches of rubber manufacture, the manufacture of sealing wax, and a model showing the preparation and dyeing of furs were added to the collections from the field of industrial chemistry. The textile collections were increased by gifts of fibers, yarns, silk and cotton dress and drapery fabrics, wool fabrics, mohair plushes, and machine embroideries; also many examples of modern handicraft. To the collections arranged to show the importance of wood and the industries based thereon were added veneered panels of woods used in the furniture industry, showing the different kinds of finishes used, a series of specimens demonstrating the manufacture of lead pencils, and a large timber of Douglas fir to represent an important product of the forests of the Pacific Northwest. The collections added to the division of medicine were chiefly in the field of public health, and consisted of models and posters showing advances in sanitary science. Specimens of materia medica and numerous objects asso-

ciated with the history of medicine in America were among other additions to this division.

Work of the division of graphic arts continued mainly along lines developed in past years, and consisted of improving and completing existing series of specimens and the continuance of special exhibitions. Fourteen of the latter held during the year attracted favorable attention. Valuable additions to exhibit materials have been received or promised as a result of these exhibits.

One important new exhibit of microengraving has attracted much attention. It consists of "The Lord's Prayer" engraved on glass in a square space about $\frac{1}{13500}$ of an inch on a side, so arranged that it is viewed under a microscope through the eye of a needle. The entire exhibit was prepared and presented by Alfred McEwen, of New York City.

The exhibit of mezzotints has been completely rearranged, with additions of new specimens to the historical series and of two series of plates and prints to the technical set, so that it now presents a clear idea of the early and modern methods of engraving mezzotints.

The collection illustrating methods used in printing for the blind has also been greatly improved by the incorporation of additional material which gives a clear idea of the method of making and printing the special plates required in this work and the manner in which the characters are read by the blind.

Three Babylonian tablets about 4,000 years old, inscribed with cuneiform writing, acquired by purchase, have been placed with the exhibits on the history of writing where they make an interesting addition. Two of these of small size are of baked clay and represent a skillful form of writing. The other represents the effort of a schoolboy learning to write, and, while crude, is of considerable interest. Tablets of this latter kind are very rare, as they are of unbaked clay and were not intended to be permanently preserved.

From Mr. B. M. Comerford, of Washington, D. C., were received four examples of the rare and beautiful art of fore-edge decorating, which consists of painting on the small portions of the leaves of a book that are exposed when the back is pushed out of normal position. The picture disappears when the book is closed. This art is said to have been originated by Samuel Mearne, who is reported to have practiced it as early as 1662.

The aquatone process, which was mentioned in last year's report as a new and beautiful development among modern photomechanical processes, is now represented by an exhibit indicating the technical steps in the process of preparing and printing such a plate. This is the gift of William Edwin Rudge, of New York, and shows well the simplicity of the process and the beauty of the results obtained.

The two traveling exhibits prepared by the division have been out almost continuously, and have been shown by various art museums and graphic art organizations in the eastern half of the country, including those in Milwaukee, Wis., Brooklyn, N. Y., and Houston, Tex., as well as many intermediate points. Four other smaller exhibits are being prepared, which likewise depict the technical side of graphic arts but on a smaller scale. These consist of 25 mats, measuring 14 by 17 inches, weighing approximately 30 pounds, that can be shipped by mail at very small expense. The larger exhibits, which weigh 320 and 430 pounds, respectively, are forwarded by express.

The collection of photographs in the section of photography is becoming one of the most important public collections in the country, due to the efforts of A. J. Olmsted, custodian, and Mr. Floyd Vail, of New York City.

History.—The additions to the historical collections surpass both in number and scientific importance those received during the previous year. The military collections have been increased by the addition of a number of objects of special interest, among which are a presentation sword, flags, uniforms and accessories, and medals and badges owned by Lieut. Gen. Nelson A. Miles. The sword was presented to General Miles in 1887 by citizens of the State of Arizona in recognition of his services in connection with the capture of the Indian chief, Geronimo, and his band of hostile Apaches. The medals and badges include the Congressional Medal of Honor and the badge of the Society of the Cincinnati. An object of special interest in this connection is a large heart-shaped shield of silver and bronze which was presented to General Miles by the officers of the Fifth United States Infantry. These objects have been received by the Museum from Mrs. Samuel Reber and Maj. Sherman Miles, United States Army. A number of presentation and service swords owned during the nineteenth century by Maj. Gen. Frank Wheaton, United States Army, have been presented to the Museum by Mrs. Frank Wheaton. From Gen. John J. Pershing was received a number of military flags, maps, and posters, and the office desk and accessories which he used at the headquarters of the American Expeditionary Forces at Chaumont, France, during the World War.

The naval collections have been increased by the addition of a sword and two uniform coats owned during the early part of the nineteenth century by Commodore Samuel Woodhouse, United States Navy, which have been presented by Dr. Samuel W. Woodhouse, jr., and also by the transfer from the Navy Department of a series of 17 models illustrating the development of the United States Navy during the period from 1776 to 1920.

Through the cooperation of the United States Treasury Department, a number of valuable United States and foreign coins and medals have been added to the numismatic collections. Of special interest in this connection has been the transfer from the Treasury Department to the Museum of about 800 publications, forming a highly useful library, on the subject of numismatics.

The portrait collection was increased by the following additions: A portrait of Elizabeth Cady Stanton by Anna E. Klumpke was presented by the National American Woman's Suffrage Association; portraits of Gen. John J. Pershing and Marshal Ferdinand Foch were presented by the artist, Victor Perard. A portrait of President Warren G. Harding, by John Innes, showing the former delivering an address at Stanley Park, British Columbia, July 29, 1923, was presented to the Museum by the National Press Club, Washington, D. C.

EXPLORATIONS AND FIELD WORK

The greater part of the material added to the collections during the current year was as usual derived from expeditions and explorations under the auspices of private organizations and Government agencies.

In biology the National Geographic Society was a large contributor through its expeditions in China, in the Arctic, and in this country. From the former extremely valuable and extensive collections, comprising some 68,000 plants, over 1,600 birds, 60 mammals, and other specimens, were received from the society's expedition under Dr. Joseph F. Rock, principally from the Province of Yunnan. The bulk of the material collected by the society's expedition under Mr. F. R. Wulsin, which has been referred to in previous reports, was received during the past fiscal year. It comprised important and extensive collections of birds, mammals, reptiles, and fishes from inner Mongolia, the Alashan Desert, and Western Kansu, in the region of Lake Kokonor, northeastern Tibet, as well as from the Min Sha Range, which marks the boundary between the Provinces of Kansu and Szechwan. The specimens from this source are of particular importance, since they afford topotypes of numerous species described from Przevalski's famous exploring trip of 50 years before. They also include important ethnological material from a region not heretofore represented in this institution. The collections from these sources supplement those made by Mr. R. S. Clark and Mr. Arthur deC. Sowerby in 1908–9 in Kansu, Thansi, and Shensi, and the important collections made during the past year by Rev. David C. Graham in Szechwan. The latter were secured on a difficult trip to Songpan and the Yellow Dragon Gorge,

and comprise many specimens new to the Museum. Incidental to the Arctic explorations undertaken for the National Geographic Society in Bering Sea and Arctic America during the summer of 1924 by Capt. R. A. Bartlett, and by Mr. D. B. Macmillan in the *Bowdoin* in Greenland in 1924, some interesting zoological material was secured and presented to the Museum. In August, 1924, Mr. Paul C. Standley was detailed as a member of the Carlsbad Cavern expedition of the National Geographic Society, his association in the enterprise resulting in a collection of some 500 specimens of plants, many of species not previously known from New Mexico. A popular account of the vegetation of the Carlsbad Cavern region has been prepared for publication largely on the basis of this field work. Under the auspices of Mr. Robert S. Clark, several eastern Provinces in China were visited by Mr. Arthur deC. Sowerby, from whom extensive collections were received. Dr. Hugh M. Smith, who is at present fisheries adviser to the Siamese Government, forwarded interesting zoological material from that country.

As a result of his visit to Haiti during the spring of 1925, Mr. Gerrit S. Miller, jr., of the Museum staff, secured a collection of the extinct vertebrate cave fauna as well as miscellaneous specimens of the living mammals, birds, reptiles, insects, and plants of the island. Doctor Bartsch continued his experiments with Cerions, through the assistance of the Carnegie Institution of Washington, his visit to the experimental colonies of these mollusks planted on the Florida Keys resulting in the addition of some 2,700 specimens to the collections. In addition, through the cooperation of the United States Coast Guard, he was able, with the assistance of Mr. W. B. Marshall of the Museum staff, to do some dredging in the inner leads of Cape May and in the shallow waters off the coast of New Jersey, which resulted in adding quite a number of specimens from a region little explored. A survey of the fisheries of the Republic of Salvador, undertaken by S. F. Hildebrand and F. J. Foster, of the United States Bureau of Fisheries, at the request and at the expense of the Salvadorean Government, resulted in the collection and subsequent transfer to the Museum of a large collection of fishes and some crustaceans from the region referred to. Secretary Walcott's field work in the Canadian Rockies, in addition to yielding important paleontological material, added a number of valuable zoological specimens, some of which have been utilized in preparing a new exhibition group of Rocky Mountain goats in the Mammal Hall of the Museum. As the result of the detail by the Department of Agriculture of Mrs. Agnes Chase, of the Bureau of Plant Industry, to field work in the eastern highlands of Brazil, important botanical material was received for the National Herbarium.

Dr. William Schaus, honorary assistant curator of insects, through personal efforts raised the sum of $50,000 for the purchase of the famous collection of Lepidoptera gathered by M. Paul Dognin, Wimile, France, comprising a series of specimens highly valuable for studies of these important insects. Doctor Schaus went to France to supervise the packing of this collection for shipment to the museum, where it has been received, although not in time to be included in more detail in this report.

The material secured by the Marsh-Darien expedition to Panama, referred to in last year's report, was received during the past year. It contained so much interesting ethnological material of a class not previously represented in our collections that it has been made the basis of a special report prepared by Mr. H. W. Krieger, curator of ethnology. Mr. Neil M. Judd, curator of American archeology in charge of the Pueblo Bonito expedition of the National Geographic Society, secured important collections for the Museum, and equally important material was secured by Mr. Gerard Fowke under the auspices of the Bureau of American Ethnology from burial sites near Muscle Shoals, Ala., which will soon be covered by water impounded by the Wilson Dam. Doctor Fewkes, Chief of the Bureau of American Ethnology, assisted by Mr. M. W. Stirling, of the department of anthropology, conducted an exploration of ancient Indian mounds at St. Petersburg, Fla., which resulted in important finds and material valuable to the collections. Dr. Aleš Hrdlička, of the Museum staff, assisted by a generous grant from the Buffalo Society of Natural Sciences, left in March for an extended trip through the Far East, Australia, and South Africa for the purpose of observing at first hand a number of peculiar races of men and to collect data on various discoveries of ancient man.

Under the auspices of the United States Geological Survey, Dr. W. F. Foshag, of the Museum staff, was enabled to make collections and to visit mineral properties in western Nevada where acquaintances made with mine owners and collectors will inure greatly to the benefit of the Museum. He also collected a series of minerals from California. Short trips to various localities in Maryland were made by Mr. Earl V. Shannon, of the Department of Geology, in cooperation with the State geological survey, and to Connecticut through an arrangement with the geological and natural history survey of that State, which resulted in necessary additions to our collections. Aided by grants from the O. C. Marsh and Joseph Henry endowment funds of the National Academy of Sciences, Secretary Walcott continued his field work in western Alberta for the purpose of completing his reconnaissance of the pre-Devonian

formations north of Bow Valley, the main objects of this year's work being to determine the correct geologic horizon of the Lyell limestone. Many attempts to do this during the past six years resulted in failure, and it really seemed that these great limestone beds were barren of fossils. In measuring geologic sections in the Tilted Mountain Area, however, interbedded bluish-gray layers containing fragments of Upper Cambrian trilobites were at last found, which proved their correct geologic horizon.

Dr. Charles E. Resser continued his field explorations of the Cambrian and associated formations. Dr. R. S. Bassler, in cooperation with the geological survey of Tennessee, continued his work in that State, and at the same time made collections of Mississippian fossils for the Museum. Mr. Erwin R. Pohl was detailed for a short time to make collections from the celebrated Rysedorph conglomerate of northern New York, which resulted in a good series of fossils for the Museum.

In cooperation with the National Park Service, Mr. C. W. Gilmore, curator of vertebrate paleontology, visited the Grand Canyon National Park, Ariz., for the purpose of accompanying the Doheny scientific expedition as an observer to investigate and make collections of fossil tracks exposed in the Coconino sandstone and to prepare an exhibit of the tracks in situ by the side of the Hermit Trail leading into the Grand Canyon. His trip was a most successful one in all of its aspects, a series of slabs some 2,000 pounds in weight and containing a splendid series of the fossil footprints being collected and shipped to the Museum. Dr. J. W. Gidley, of the geological staff of the Museum, visited the region around Melbourne, Fla., on two occasions during the year and secured an interesting collection of fossils. He also visited Adele, Iowa, for the purpose of studying the geology of a formation in which had been found certain human artifacts. Continuing the practice of previous years, Mr. Norman Boss made several short trips to the Calvert Cliffs along Chesapeake Bay in search of Miocene fossils.

A movement which promises important results to the Museum was inaugurated in the summer of 1924, when the Secretary of the Navy invited the Smithsonian Institution to participate in a conference of representatives of the executive departments and scientific establishments of the Government of the United States for the purpose of formulating plans for a naval expedition to undertake investigations in oceanography. Mr. Austin Clark, Dr. Waldo L. Schmitt, and Dr. Paul Bartsch, of the Museum staff, were designated as representatives of the Institution on this occasion, and at the close of the meeting Mr. Clark was chosen as representative of the Smithsonian Institution and its branches on an executive interim committee.

BUILDINGS AND EQUIPMENT

The various buildings of the Museum have been kept in good con-ion throughout the year through minor repairs, which have con-ted largely in painting walls, ceilings, and floors, repairing cracks plaster and cement surfaces, painting tin gutters and roofs, and rk of a similar character. In the Arts and Industries Building w floors were laid in a few of the rooms and the ventilation im-oved.

In the Smithsonian Building it was necessary to replace with aded sheets the entire plaster ceiling of the main hall on the third or, occupied by the Museum's division of plants. The work was ne partly by contract and partly by the Museum force.

Under a special appropriation for the purpose, four modern fire drants were installed under the direction of the District Commis-ners in the Smithsonian Park.

The cost of heating for the year was considerably less than during e previous year, due partly to the lower cost of coal and partly to e fact that for the first time in many years it was possible to ure coal from the New River fields, which is better adapted to the ating apparatus. During the year, 3,292 tons of bituminous and .5 tons of anthracite coal were used. The total electric current nerated during the year was 476,709 kilowatt-hours, at a total cost 2.362 cents per kilowatt-hour, including labor, material, interest, d depreciation on the plant.

A total of 346.3 tons of ice were produced during the year at a st of $2.309 per ton. A new compressor has been purchased which, th increase in the size of the condenser made during the year, will crease the capacity of the ice machine from 2 to 2½ tons per day. ven with the cost of the new compressor included, the cost per ton ice will be under the wholesale price paid for ice by the Govern-nt.

During the year 18 exhibition cases and bases and 127 pieces of rage, laboratory, office, and other furniture were acquired by rchase and construction. Of the storage cases 11 were purchased d 116 built in the Museum shops.

MEETINGS AND RECEPTIONS

The Department of Agriculture was granted the use of the audi-ium on October 27, 28 and 31 for a series of lectures by Dr. rnon H. Blackman, of the Imperial College of Science and Tech-logy in London, and on January 26 for a lecture on Agricultural search and the Community, by Sir Daniel Hall, scientific adviser

to the Minister of Agriculture in England, all lectures being open to department workers and others. Other bureaus of this department using the auditorium were the Forest Service for a series of five lectures extending from October to June, the Bureau of Agricultural Economics for an exhibition and talk on the evening of April 20 by Mr. L. M. Estabrook, and the Federal Horticultural Board on June 29 and 30, for public hearings on fruit and rose stocks and the white-pine blister rust (when room 43 was also used), and again on September 20 by the same board for a conference on the white-pine blister rust quarantine. The auditorium and all committee rooms available were used for a national conference on utilization of forest products called by Secretary Wallace on November 19 and 20. On the afternoon of May 22, the department's post, Veterans of Foreign Wars of the United States, held memorial services in the auditorium in honor of the late Henry C. Wallace, and of the men of the Department of Agriculture who lost their lives in the World War.

The Department of Commerce occupied the auditorium for the National Radio Conference on October 7 and 8.

Dr. Aleš Hrdlička, of the Museum staff, gave two courses of lectures on anthropology during the period from October 24 to December 19—Man's Origin, on Friday afternoons in the auditorium, and Man's Physical and Physiological Characteristics, on Monday afternoons in room 43. These proved highly popular and were well attended.

Under the auspices of the School of Foreign Service, a series of 12 lectures were given in the auditorium by Dr. Edmund A. Walsh, S. J., of Georgetown University, on Russia in Revolution. These extended over a period from February 13 to May 15 and attracted much attention.

Associations and societies using the auditorium and room 43 for their annual meetings were the American Association for the Advancement of Science, December 29 to January 3, and the American Society of Mammalogists, April 8 to 10. The American Surgical Association met in the auditorium May 4, 5, and 6, and on the same dates the eighth annual meeting of the American Association for Thoracic Surgery was held in room 43. On the evening of January 2 the division of insects of the Museum was thrown open to members of the Entomological Society of America and the Association of Economic Entomologists, who were in attendance at the meeting of the American Association for the Advancement of Science.

In addition to the foregoing the auditorium was used on various occasions by the Wild Flower Preservation Society, the Audubon Society of the District of Columbia, the District of Columbia Dental

ociety, Washington Society of Engineers, Washington Chapter of ıe American Association of Engineers, Practical Psychology Club, ıd the Boy Scouts of the third division.

Among the scientific and other societies that met regularly in ›om 43 were the Anthropological Society of Washington, the Ento- ıological Society of Washington, the American Horticultural So- ety, and the Society for Philosophical Inquiry. Those using the ›om from time to time were the Audubon Society of the District f Columbia during February and March for a series of talks by 'r. Alexander Wetmore; the Helminthological Society of Washing- ›n, when Prof. E. Brumpt, of the University of Paris, made an ıdress; the Biological Society of Washington, for an address by . Johansen; the Washington Chapter of the American Institute f Chemists; the directors and assistant directors of municipal play- rounds, the Camp Fire Girls, and the Camp Fire Guardians, and y the Garden Homes Association for addresses intended "to en- ›urage people to own a home and garden."

Mr. Chr. Thams, minister of the Prince of Monaco to France, n November 29 gave a lecture on the results of a journey under- ıken into eastern Africa for the purpose of advancing the cause f conservation of wild life. The lecture was illustrated by a fine ›ries of moving pictures impressive for their accuracy in revealing ıe habits of big game under natural conditions.

At the request of the Air Service Officers Reserve Corps, pictures lustrating the flight around the world were shown in the audi- ›rium on the evening of April 8.

On the evening of May 2 the auditorium was used for a private howing of the historical picture made for the Commission of Re- .ef in Belgium, before Secretary Hoover, who was chairman of hat organization during the years of its operation from 1914 to 919.

The auditorium was also used by the following: The Filipino 'lub of Washington, on the evening of July 3, for a meeting to elebrate the Fourth of July; El Club Cervantes, on the evening f December 20, to celebrate the centenary of the Battle of Ayacucho, he decisive battle in South America's wars for independence; by ›eñor Don C. de Quesada, of the Cuban Embassy, on the evening of Iarch 28 to celebrate the ratification of the treaty of the Isle of 'ines and in honor of the Spanish War Veterans; the Cornell ılumni Society of Washington for a musical recital by Prof. 'ladimir Karapetoff, of Cornell University, on the evening of ıpril 23.

A national spelling bee was held in the auditorium on the eve- ing of June 17, under the auspices of the Courier Journal and ›ouisville Times, of Louisville, Ky.

At the request of the Washington Chapter of the American Institute of Banking all of the exhibition halls on the ground, first, and second floors of the Natural History Building were opened on the evening of July 19 for a reception to the members of the Institute meeting in Washington at that time.

A joint meeting of the Anthropological Society of Washington, the Washington Academy of Science, the Art and Archeology League, in conjunction with the Archeological Institute of America, was held in the auditorium on the evening of December 16, during which Count Byron Kuhn de Prorok gave a lecture on the "Carthage excavations, 1924," and "The dead cities of the Sahara." After the lecture a reception was held in the Art Gallery.

As one of the features of the meeting of the American Association for the Advancement of Science, on the evening of December 29, members and their guests were received in the Art Gallery by the Secretary of the Institution and Mrs. Walcott, at which time the entire first floor of the building was open. On the evening of June 10, the halls on the first and second floors were opened for a reception to the delegates of the National Association of Credit Men attending the convention held in Washington from June 8 to 13.

MISCELLANEOUS

For the first time in the history of the Museum the total number of visitors to the several buildings reached more than 1,000,000. These were recorded at the several buildings as follows: Arts and Industries, 304,858; Natural History, 557,016; Aircraft, 52,787; Smithsonian, 107,342; a total of 1,022,003.

The Museum published 5 volumes and 70 separate papers during the year while its distribution of publications amounted to 104,596 copies of books and pamphlets.

Additions to the library numbered 1,457 books and 1,894 pamphlets, mostly obtained by exchange or donation. With the funds available, only a few books could be purchased. Important contributions which have not yet been catalogued are the bequest by the late Col. Thomas L. Casey of approximately 4,500 books and pamphlets, mostly relating to Coleoptera, which were not entirely assorted until after the close of the year, and the transfer from the Treasury Department of 800 books and pamphlets relating to the science of numismatics.

Through the operation of the reclassification act, which became effective July 1, 1924, the salary standards in the Museum, particularly of the scientific staff, were materially improved and for the first time in many years every position in the Museum personnel was filled. The staff in the department of anthropology was completed

through the appointment of Mr. Herbert W. Krieger as curator and Mr. Henry B. Collins as assistant curator of ethnology. In the department of arts and industries Miss Aida M. Doyle was appointed aid to succeed Mr. Harry W. Rabinowitz, resigned, and in the division of history Miss Hortense Hoad was appointed aid.

In accordance with the special provision, included in the last appropriation act, creating a new Assistant Secretary of the Smithsonian Institution to have general charge of the museum interests of the Institution, including the United States National Museum, the National Gallery of Art and the National Zoological Park, the present incumbent was honored with appointment to that office on the 1st of April, 1925.

The Museum lost two employees during the year through the operation of the retirement act, viz, Mr. N. P. Scudder, assistant librarian of the Smithsonian Institution, in charge of the Museum library, and Robert Ghor, fireman. The only death among employees on the active rolls of the Museum was that of Israel Freeman, a laborer, employed in the Museum over 15 years, who died on July 16, 1924.

Respectfully submitted.

ALEXANDER WETMORE,
Assistant Secretary.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 2

REPORT ON THE NATIONAL GALLERY OF ART

Sir: I have the honor to submit the following report on the affairs of the National Gallery of Art for the year ending June 30, 1925.

The activities of the gallery for the fifth year of its status as a separate administrative unit of the Smithsonian Institution correspond closely with those of previous years. The staff, which is limited to the director and the recorder, has been occupied during the year with the current work of the gallery; with the receipt, record, installation and care of the collections, permanent and temporary; with the affairs of the gallery commission; with the development of an art library; and with promotion of the gallery's diversified interests. Other employees are: a stenographer, a gallery attendant, three watchmen, two laborers, two charwomen, and a carpenter who is assigned to the gallery by the National Museum when his services are required.

Additions to the gallery collections have fallen short of the average of previous years, the art works received by the Institution and awaiting approval by the advisory committee of the gallery commission not greatly exceeding a hundred thousand dollars in estimated value. This falling off is due, at least in part, to the shortage of exhibition space. Further important enrichment of the collections must thus await the erection of a gallery building, since collectors seeking a final resting place for their treasures consider very carefully their prospective installation and care. Mention may be made here of the fact that during the period between 1904 and 1924, the period during which suitable exhibition space happened to be available in the museum buildings, accessions by gift and bequest averaged in value approximately half a million dollars per year. With a gallery building such as the nation should have, it is believed that a million or millions annually would be within reasonable expectation. It is hardly within the range of possibility that a second benefactor will appear who is willing to present the Government with a building for his gift as did Mr. Freer, in order that the gift might be accepted.

During the year much attention has been given to the preparation of preliminary plans for a gallery building. Although Congress in 1921 set aside an appropriate site for a building, it was left

to the Institution to obtain funds necessary for the employment of an architect to prepare the preliminary plans. As the result of an appeal for this purpose by the Institution, $10,000 was raised by private subscription, and Mr. Charles A. Platt was selected to prepare the necessary plans. During the winter of 1923–24 Mr. Platt spent several months in Europe engaged in the study of the more important art galleries. The committee appointed by the Regents of the Institution to collaborate with Mr. Platt on the plans, which included in its membership Henry White, chairman; Frederic A. Delano, Herbert Adams, Gari Melchers, J. H. Gest, and C. D. Walcott, met in the Regents' room on February 13, 1925, and Mr. Platt presented the sketch plans, which he stated had been carried just far enough to be submitted for consideration by the Institution. Two hours were spent in examining the drawings, which comprised plans of the three floors, sections of the building, and a detailed drawing of the south front. Plans of a number of European galleries were submitted for comparison, and details of lighting and adaptation of space to the various requirements of the structure were considered. Mr. Platt stated that if the regents desired to have the work proceed the plans could be ready for the beginning of construction within six months, and that if appropriations were made available, the building could be completed in three years. It was expected by Mr. Platt that granite would be employed in the building. Questions of construction, employment of builders, and cost were discussed at length. Mr. Platt stated that the building, which as planned is 300 feet in width by 500 feet in length, will contain 10,000,000 cubic feet of stonework, and that the cost will hardly fall short of $1 per cubic foot. The committee accepted the plans as entirely satisfactory and reported to that effect to the Regents of the Institution.

The Platt drawings were first published in an article which appeared in the American Magazine of Art, March, 1925, where they were accompanied for purposes of comparison by the plans of a number of the principal art museums of both Europe and America. It is expected that the Regents of the Institution will, at the proper moment, present these preliminary plans to the committees of Congress having the erection of Government buildings in charge, for their consideration.

The death of Senator Lodge, a member of the Board of Regents of the Institution, who in 1924 offered in the Senate an amendment to the deficiency appropriation bill providing seven millions for a gallery building, leaves the movement without a militant head, but another will doubtless take his place since the urgent need of a building is now very generally recognized. The movement is re-

garded as having much added strength as a result of the fact that, as indicated in the Lodge resolution, the building when completed is expected to accommodate the collections of American history as well as those of art. The historical collections are of great popular interest, occupying to-day 120,000 square feet of floor space in the Smithsonian and the two Museum buildings—space urgently needed for the legitimate activities and vast collections of the several branches of natural science.

MEETINGS OF THE GALLERY COMMISSION

The annual meeting of the gallery commission was held in the Regents' room of the Smithsonian Institution December 9, 1924. The members present were: Gari Melchers, chairman; Herbert Adams, Joseph H. Gest, John E. Lodge, Frank J. Mather, jr., Charles Moore, James Parmelee, Edward W. Redfield, Charles D. Walcott, and William H. Holmes.

The very important problem of the inclusion in the prospective gallery building of collections both of art and history, as indicated in the Lodge resolution, was given attention and the view prevailed that it would be advantageous, at least for a time, to have the two departments in the same building, although definitely separated.

The question of the acceptance of works of art by the advisory committee through the medium of correspondence was raised, and after discussion it was resolved that hereafter, a majority of the advisory committee be required to personally examine the works before making recommendation. As a result of this action and the impracticability of calling the committee to Washington for the consideration of works offered from time to time, the practice has been adopted of having all works of exceptionally high merit offered to the gallery accepted by the Smithsonian Institution for submission to the advisory committee at the annual meeting of the commission or on occasions of particular importance, at especially called meetings of the committee.

Mr. Edmund C. Tarbell was selected a member of the commission to succeed Mr. Edwin H. Blashfield, resigned, and his appointment was recommended to the Board of Regents. Regarding the expiration of the three-year terms of three members of the commission, Messrs. John E. Lodge, James Parmelee, and E. W. Redfield, it was decided to recommend to the Board of Regents the reelection of these members for the succeeding term of four years. The present members of the executive and advisory committees and the present officers of the commission were reelected for the year 1925.

The Platt plans for the proposed National Gallery Building were then presented by the secretary and were given careful consideration by the members of the commission.

The advisory committee of the commission met in the gallery December 11, Gari Melchers, Miss Leila Mechlin, and W. H. Holmes being present. The following works were given favorable consideration:

Portrait of Hon. James R. Mann, by Gari Melchers.

Three paintings, the gift of Miss Emily Tuckerman: Hindoo Merchants, by Edwin Lord Weeks; Landscape (on copper), by Herman Saftleven; and Refectory, by Eduardo Zamaçois.

The personnel of the commission is as follows: Gari Melchers, chairman; Frank Jewett Mather, jr., vice chairman; William H. Holmes, secretary; Herbert Adams, W. K. Bixby, James E. Fraser, Daniel Chester French, Joseph H. Gest, John E. Lodge, Charles Moore, James Parmelee, A. Kingsley Porter, Herbert L. Pratt, Edward W. Redfield, and Edmund C. Tarbell.

The executive committee was composed of Messrs. Moore, chairman; Gest, Holmes, Mather, jr., Parmelee, and Walcott; and the advisory committee was composed of Messrs. Redfield, chairman; Holmes, secretary; Adams, Miss Mechlin, Messrs. Melchers, Platt, and Volk.

Subcommittees are as follows:

Committee on architecture, A. Kingsley Porter, chairman.
Committee on ancient European paintings, Frank J. Mather, jr., chairman.
Committee on prints, excepting the oriental, James Parmelee, chairman.
Committee on sculpture, Herbert Adams, chairman.
Committee on American paintings, E. W. Redfield, chairman.
Committee on ceramics, Joseph H. Gest, chairman.
Committee on oriental art, John E. Lodge, chairman.
Committee on modern European paintings, Gari Melchers, chairman.
Committee on textiles, no chairman at present.

The personnel of special committee is as follows:

On National Portrait Gallery, Herbert L. Pratt, chairman.
On gallery building, Charles Moore, chairman.
On raising fund for preliminary building plans, James Parmelee, chairman; Charles Moore, Charles D. Walcott.
On selection of architect for preliminary plans, Henry White, chairman; Herbert Adams, Frederic A. Delano, J. H. Gest, Gari Melchers, Charles D. Walcott, ex officio.
On department of architecture, ——— ———.
On preservation of architectural gems, ——— ———.

ACTIVITIES OF THE AMERICAN FEDERATION OF ARTS AND THE FEDERATION OF WOMEN'S CLUBS

The work of the American Federation of Arts, in promoting the development of the national gallery, deserves appreciative mention. At its 1923 convention in St. Louis the following resolution was unanimously adopted:

Whereas the United States is the only civilized nation which has no national gallery of art; and whereas there is great need for a building to house our

national art collection which in the past few years has greatly increased in size and value through gifts and bequests of public-spirited collectors and individuals; and whereas, on account of the lack of space in which to exhibit such gifts, this channel of beneficence is now checked; Be it

Resolved, That the American Federation of Arts undertake a campaign of education and promotion throughout the United States, in order to acquaint the people of existing conditions, in the hope that it may be their will when the facts are known, that a sufficient sum be appropriated by Congress to erect a suitable building at the National Capital to house the national collections and to evidence to the world that we, as a people, recognize art to be a factor in our national life.

Miss Leila Mechlin, secretary of the American Federation of Arts, states that the federation has at present 375 chapters or affiliated organizations in all parts of the United States. The intention of the federation is to secure the cooperation of these organizations, and to interest a membership numbering several hundred thousand individuals in the gallery movement.

Of like importance in the promotion of the national gallery are the activities of the Federation of Women's Clubs under the energetic direction of Mrs. Rose V. S. Berry, chairman of the art department of the federation. This great organization, whose activities extend to every State in the Union, seeks as one of its primary responsibilities to promote the cause of art, and especially to further art education in the most comprehensive manner. It seeks to have the world realize that the place given the arts of taste in a nation is an infallible test of the place that nation holds in the scale of civilization; it maintains that the promotion of these arts is thus a national responsibility. In its lecture courses and publications it utilizes the national collections, taking occasion to lay stress upon the humiliating fact that the American nation makes no adequate provision for the acquirement, care, and utilization of collections illustrating the world's achievements in the many branches of art, ignoring the example of all other civilized nations.

SPECIAL EXHIBITIONS HELD IN THE GALLERY

An exhibit of exceptional interest held in the middle room of the gallery March 3 to April 13 comprised 19 miniatures by Mr. Alyn Williams and 34 works of sculpture by Mr. Cecil Thomas, both exhibitors being Englishmen, although Mr. Williams spends much of his time in the United States. The exhibitors very generously prepared and had printed at their own expense a catalogue of the exhibits, copies of which were freely distributed. During the exhibit and for a short period thereafter Mr. Thomas was permitted to occupy one of the gallery spare rooms as a studio where he modeled two figure groups, The Duet and The Spirit of the Dance, the inspiration for which had come to him while in Washington. While

s engaged Mr. Thomas was fortunate in having sittings for a por-
t bust by Sir Esme Howard, British ambassador to the United
tes. This work met with gratifying approval and a replica in
ster was presented by the sculptor to the Smithsonian Institution
a dinner given in honor of Sir Esme by the Washington Branch
the English-Speaking Union, on May 13. Presentation was
le by the presiding officer of the occasion, and it was accepted by
tor Walcott, Secretary of the Smithsonian Institution, with
ropriate words of appreciation.

. collection of portraits in oil and various studies in other tech-
ues by Leo Katz of Vienna, Austria, was shown in the two north
ms of the gallery January 10 to February 15, and the exhibit,
prising 35 items, proved of very special interest to the people of
shington.

'he gallery was fortunate in being permitted to place on view
n December 16 to February 15 a collection of art works in bronze
terra cotta, nine in number, mainly busts of important person-
s, by Mrs. Nancy Cox-McCormack. These were mounted on
ropriate pedestals in the south room of the gallery and included
s of Benito Mussolini, Italian premier, in black marble, and
ury P. Fletcher, ambassador to Italy, in bronze.

. collection of 72 water-color paintings of the scenery of the
onal parks of the Rocky Mountain and Pacific coast regions, by
nar Widforss, was exhibited in the middle room of the gallery
ember 10 to January 10. These paintings were vivid and highly
istic presentations of many remarkable subjects and attracted
h favorable attention.

THE HENRY WARD RANGER FUND

s the paintings purchased during the year by the council of the
ional Academy of Design from the fund provided by the Henry
rd Ranger bequest are, under certain conditions, prospective
itions to the national collection, the list, including the names of
institutions to which they have been assigned, is given here:

Title	Artist	Date of purchase	Assignment
he Other Shore	Robert Spencer, N. A.	Dec. 1, 1924	The Newark Museum Association, Newark, N. J.
ancy	Lillian Wescott Hale	do	The Denver Art Museum, Denver, Colo.
heir Son	Oscar E. Berninghaus	do	The Art Club of Erie, Erie, Pa.
he Wood Cart	Louis Paul Dessar, N. A.	Apr. —, 1925	
Reading	Thomas W. Dewing, N. A.	do	
awn	Dwight W. Tryon, N. A.	do	
he Prodigal Son	Horatio N. Walker, N. A.	do	
orm Birds	Armin Hansen	do	
elen	Jerry Farnsworth	do	
ross the Valley	Hobart Nichols, N. A.	June 9, 1925	

The paintings purchased from the Ranger fund during the past fiscal year and unassigned at its close (1923–24) have subsequently been assigned as follows:

36. Midsummer, by William S. Robinson, N. A.; to the art gallery of Washburn College, Topeka, Kans.
37. The Bathers, by Spencer Nichols, A. N. A.; to the Art Hall of Beloit College, Beloit, Wis.
39. The Necklace, by Richard E. Miller, N. A.; to the Butler Art Institute, Youngstown, Ohio.
41. Clearing After September Gale—Maine Coast, by Howard Russell Butler, N. A.; to the Art Association of Indianapolis, Ind.

ART WORKS ADDED DURING THE YEAR

Permanent accessions of art works for the year are as follows:

Three paintings, the gift of Miss Emily Tuckerman: Hindoo Merchants, by Edwin Lord Weeks; Landscape (on copper), by Herman Saftleven; and the Refectory, by Eduardo Zamaçois.

Portrait of the late Hon. James R. Mann, member of the Board of Regents of the Institution from 1906 to 1911, by Gari Melchers: gift of Mrs. James R. Mann.

Entrance portal to the Benjamin H. Warder house, 1515 K Street NW., Washington, D. C., designed by the eminent architect, Henry Hobson Richardson (1838–1886), including the door, carved trim and voussoirs (Berea grit). Gift of the cooperating committee on architecture in the National Gallery of Art, through Mr. Horace W. Peaslee, acting chairman, and 13 subscribers.

A landscape in water color, The Patriarchs, Zion National Park, by Gunnar Widforss. Gift of the artist.

Portrait of Chauncey Mitchell Depew, by George Burroughs Torrey. Gift of the Hon. Chauncey M. Depew, for the National Portrait Gallery.

Portrait bust in plaster (bronzed) of the Rt. Hon. Sir Esme William Howard, British ambassador to the United States, by Cecil Thomas. Presented by Mr. Cecil Thomas through the Washington branch of the English-Speaking Union.

The Libyan Sibyl, a statue in Carrara marble, heroic in size, by William Wetmore Story, and a portrait bust of Napoleon Bonaparte, in Carrara marble, by Raimondo Trentanove. Presented by the estate of Henry Cabot Lodge, through Mr. John E. Lodge.

Portrait of Dr. Samuel Pierpont Langley, by Mme. M. de Leftwich-Dodge. Gift to the Smithsonian Institution from Mme. A. Langley Ciocca, of Rome, Italy, sister of Doctor Langley.

Medallion portrait (in plaster) of Dr. Charles W. Eliot, president emeritus of Harvard University, by W. Clark Noble. Gift of Mr. W. Clark Noble.

Collection of French and other art objects, including silverware, furniture, porcelains, pottery, glassware, bronzes, etc. Bequest of the Rev. Alfred Duane Pell, D. D., not as yet fully received and recorded by the gallery.

LOANS ACCEPTED BY THE GALLERY

Portrait bust in marble of the late Samuel Gompers, president of the American Federation of Labor, by Moses Wainer Dykaar; lent by the American Federation of Labor.

Four paintings lent by the estate of Henry Cabot Lodge, through Mr. John E. Lodge, as follows: Portrait of Alexander Hamilton, by John Trumbull; portrait of Fisher Ames, by Gilbert Stuart; River Landscape with Cattle, by Constant Troyon; and Stable Interior with Horses and Groom, by John F. Herring.

A painting of large size, The Annunciation, attributed to Lorenzo Sabbatini (or Lorenzino da Bologna), lent by the Misses McKey through Miss Laura M. McKey.

LOANS BY THE GALLERY

Paintings belonging to the gallery were lent for exhibition elsewhere, as follows:

The large painting entitled "The Happy Mother," by Max Bohm, lent to the Painters and Sculptors Association, Grand Central Art Galleries, to be included in an important memorial exhibition of the works of this artist in November, 1924. Returned to its place in the gallery at the close of the exhibition.

The painting entitled "June," by John W. Alexander, lent to the American Federation of Arts for a special "Alexander exhibit." The collection was shown at Albany, N. Y., in the art department of the State Teachers College, and later at Easton, Pa., where it was used by the art supervisor of the Easton school district. The painting has been returned to its place in the gallery.

The three paintings, Birch Clad Hills, by Ben Foster, A Family of Birches, by Willard Metcalf, and The Island, by Edward W. Redfield, lent to the American Federation of Arts for the International Exhibition of Paintings by American Artists held in Venice, Italy, during the summer of 1924, have been returned to the gallery.

One set of colored slides of works belonging to the gallery, lent to the American Federation of Arts, and a second set to the art department of the American Federation of Women's Clubs, are retained for utilization by these organizations. In several instances selections from the gallery's collection of slides have been lent to the normal schools of Washington and to the art department of Howard University.

DISTRIBUTIONS

Paintings lent to the gallery have been withdrawn by their owners during the year as follows:

Rosita, by I. Zuloaga; withdrawn by the Hon. John Cecil for Mrs. George W. Vanderbilt.

Portrait of His Daughter, by Titian (copy?); withdrawn by Mr. Joseph Stewart, who had purchased it from the former owner, Dr. Nathan Boyd.

Self Portrait by James Deveaux; withdrawn by Dr. Houston Mifflin, the owner, who had deposited it in the gallery through Dr. Porter F. Cope.

The Pickering Dodge Collection of seven cameos; withdrawn by Mrs Charles W. Rae.

Portrait of Chief Justice Joseph C. Hornblower and portrait of Mary B., his wife, artist unknown; portrait of Roderick Austin, attributed to Sir Godfrey Kneller; and a painting representing a sacrifice interrupted by soldiers, artist unknown; withdrawn by Mrs. Caroline B. Hornblower.

Klingle Ford, by Max Weyl; withdrawn by Mrs. John W. Smith.

PUBLICATIONS

Holmes, W. H. Report on the National Gallery of Art for the year ending June 30, 1923. Appendix 2, Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1923, pp. 45–58.

——— Report on the National Gallery of Art for the year ending June 30, 1924. Appendix 2, Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1924, pp. 48–58.

Catalogue of a collection of water-color paintings of the Grand Canyon of the Colorado, Yellowstone National Park, Yosemite Valley, Zion National Park, Utah National Park, and the Monterey Coast of California. Of special interest to the Interior and Agriculture Departments. By Mr. Gunnar Widforss. On view in the central room of the National Gallery, Natural History Building, United States National Museum, December 10 to January 10. Washington, 1924, pp. 1–4.

Catalogue of a collection of busts of prominent personages in bronze and terra cotta, by Mrs. Nancy Cox-McCormack, on view in the south room of the National Gallery, Natural History Building, United States National Museum, December 16, 1924, to January 16, 1925. 1924, pp. 1–4.

Catalogue of a collection of portraits and studies in different techniques, by Leo Katz, of Vienna, Austria, on view in the north rooms of the National Gallery, Natural History Building, United States National Museum, January 16 to February 15, 1925. 1925, pp. 1–4.

Catalogue of recent miniature portraits by Alyn Williams, P. R. M. S. (President, Royal Miniature Society), and portrait busts in bronze and plaster, relief portraits, medallions, carvings in precious and semiprecious stones, and some great seals, by Cecil Thomas, R. M. S., on view in the National Gallery, Natural History Building, United States National Museum, March 3 to March 22, 1925. 1925, pp. 1–8.

Respectfully submitted.

W. H. HOLMES,
Director

Dr. CHARLES W. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 3

REPORT ON THE FREER GALLERY OF ART

SIR: I have the honor to submit the fifth annual report on the Freer Gallery of Art for the year ending June 30, 1925:

THE COLLECTION

Work has been continued during the year in the preservation of the collection, and in the print collection a total of 1,056 objects have now been put in final condition. A complete list of the Freer Gallery collection of paintings, pastels, drawings, prints, and copper plates by and attributed to American and European artists, together with a list of original Whistleriana, has been prepared and is about to be published in pamphlet form. This pamphlet will be placed on sale with the the other publications issued by the gallery.

Changes in exhibition during the year involved 46 oil paintings, 2 water colors, 12 pastels, 30 etchings and dry points, 38 lithographs, 2 Japanese screens, 3 Japanese panels, 1 Japanese *makimono*, 4 Chinese panels, 2 Chinese scrolls, 11 Chinese bronzes, 1 Indian bronze, and 2 Chinese textiles.

Additions to the collections have been as follows:

By gift of Charles A. Platt:

AMERICAN PASTEL

25.1. Whistler, James McNeill; portrait of Miss Emily Tuckerman.

By purchase:

INDIAN BRONZE

24.10. Buddhist statuette: Saṁvara (*Yi-dam*, tutelary divinity). Nepal, fifteenth century.

INDIAN PAINTING

24.4. *Laila Majnun.* Mughal, time of Jahāngīr (1606–1628).
24.5. Ādil Shāh. Mughal, time of Jahāngīr (1606–1628).
24.6. Fireworks. Illuminated manuscript on the reverse. Mughal-Rajput, time of Shāh Jahān (1628–1658). By Muhammad Afzal.
24.7. Mālaśrī Rāginī (a musical mode). Rajput, about 1600.
24.8. Bhairavī Rāginī (a musical mode). Rajput, about 1675.
24.9. A visit to a temple. Rajput-Mughal, about 1675.

CHINESE BRONZE

25.2. Ceremonial vessel of the type *tsun*. Early Chou dynasty (1122 to 255 B. C.).
25.3. Ceremonial wine vessel of the type *chio*. Chou dynasty (1122 to 255 B. C.).

CHINESE PAINTING

24.3. Landscape: Breaking waves and autumn winds. A scroll. By Tai Chin Ming, middle fifteenth century.

NEAR EASTERN POTTERY

25.4. Bowl with painted decoration. Persian, Rhages. Twelfth-thirteenth century.
25.5. Bowl with painted decoration. Persian, Rhages. Twelfth-thirteenth century.
25.6. Bowl with decoration in gold luster. Persian. Eighth century.
25.7. A small dish with painted decoration under glaze. Arab. Tenth-eleventh century.
25.8. Bowl with engraved decoration under glaze. Persian. Ninth century.
25.9. Bowl with decoration engraved and painted under glaze. Persian. Ninth century.
25.10. Bowl with decoration engraved and painted under glaze. Persian. Ninth century.
25.11. Bowl with decoration engraved and painted under glaze. Persian. Ninth century.
25.12. Bowl with decoration painted in black over glaze. Persian. Ninth century.

Additions to the library by gift and purchase comprise 90 books and periodicals and 127 pamphlets. A list of these accompanies this report as Appendix A (not printed). Forty-six volumes have been rebound.

The work of making identification photographs for use in the card catalogue continues, and in addition, several hundred photographs and a number of lantern slides have been made to order and delivered to purchasers. Of the publications issued by the gallery, there have been sold during the year, 538 copies of gallery books, 422 copies of the Synopsis of History, and 682 copies of the descriptive pamphlet.

During the past year there has been an increasing demand upon the gallery for translations of Chinese, Japanese, and Tibetan inscriptions, and for information concerning various objects. One hundred and five such objects, consisting, for the most part, of Chinese, Tibetan, Japanese, and Korean paintings, Japanese prints and articles of pottery and jade, have been submitted for examination.

The usual work in repairing and making exhibition cases, picture frames, stretchers, and other equipment has been done in the gallery shop, and the necessary minor repairs to the building, as well as certain improvements such as the construction of a photographic dark room in the attic, were made by the employees of the shop.

The Freer Gallery begs to acknowledge its indebtedness to the Department of Agriculture for its aid in exterminating the boxwood pest, "the leaf miner," and to thank the Fish Commission for its *gift of* goldfish for the fountain basin.

ATTENDANCE

'he gallery has been open every day with the exception of Mon- from 9 until 4.30. The total attendance for the year was 109,862. ' aggregate Sunday attendance was 28,172, making an average 541; the week-day attendance amounted to 81,690, with an aver- of 313. Of these visitors, 431 came to the study rooms to see ects not on exhibition or to consult books in the library; 4 to ke copies or photographs, 72 to examine the building and equip- nt, while 27 brought objects in their possession for examination information.

PERSONNEL

Mr. Y. Kinoshita, of the Museum of Fine Arts, Boston, worked the gallery during the winter months on the preservation of ental paintings.

Mr. Herbert E. Thompson worked on the preservation of oil ntings.

FIELD WORK

A detailed account of the activities of the gallery's expedition in na is contained in Appendix B (not printed) accompanying this ort, and will be condensed for publication in Explorations and ld Work of the Smithsonian Institution in 1925.

Respectfully submitted.

J. E. Lodge, *Curator.*

Dr. Charles D. Walcott,
Secretary, Smithsonian Institution.

APPENDIX 4

REPORT ON THE BUREAU OF AMERICAN ETHNOLOGY

SIR: I have the honor to submit the following report on the researches, office work, and other activities of the Bureau of American Ethnology during the fiscal year ended June 30, 1925, conducted in accordance with the act of Congress approved June 7, 1924. The act referred to contains the following item:

> American ethnology: For continuing ethnological researches among the American Indians and the natives of Hawaii, including the excavation and preservation of archeologic remains, under the direction of the Smithsonian Institution, including the necessary employees and the purchase of necessary books and periodicals, $57,160.

The policy of the Bureau of American Ethnology in the past has been that of a pioneer, but from necessity the field work of the staff has been both intensive and extensive, mainly reconnaissance. As a pioneer, the bureau has opened up new lines of research in the study of the ethnology of the American Indians and has blazed a trail for others in several fields. While contributing to science technical monographs on certain Indian tribes, it has at the same time prepared and circulated, through publication, articles of a popular character covering the whole subject. The object has been to furnish reliable data for students wishing accurate knowledge of the American Indians.

The aboriginal culture of our Indians is rapidly disappearing and being replaced by the white man's civilization. Certain tribes have already lost almost all their native customs, and others will follow rapidly until little of scientific value remains for ethnological field work. The older men among them, who in their prime knew the native cults and rituals, are passing away, and the younger generation of Indians who are taking their places are almost entirely ignorant of the significance of the rituals or ceremonials. Current fables and metaphoric stories, mainly explaining the characteristics of animals, are now often claimed to be mythologic, although many of them have value as tales, not as myths. The Indian culture is passing away and soon will be lost. It is the intention of the Bureau of American Ethnology to record it before its extinction.

The excavation and preservation of archeologic remains, from which much valuable scientific material may be obtained, constitute

a task which is only just begun. The bureau has for many years been a pioneer in this work, and in many areas it has been the only investigator. The first publication of the Smithsonian Institution was on an archeological subject, and with the passing years the bureau has followed this line of work with vigor.

It is a traditional, sound policy of the Institution, as a result of the relatively small allowance for the field study of the Indians, to cooperate, rather than to attempt to compete with those who have a much larger income. This policy has been pursued by the bureau during the past year.

The chronicles of De Soto's wonderful trip through our southeastern States introduced to the attention of historians a remarkable aboriginal American culture, one of the most advanced in North America outside of Mexico. It was, as has generally been the case, built on agriculture, and the dominant tribal religion of its civilization was a complex of Sun, Fire, and Great Serpent cults. From Tampa Bay to the Mississippi River, De Soto encountered numerous tribes differing in language and in minor ethnological features, but all belonging to the same culture with a worship characteristic wherever agriculture served as a source of food. As time went by and renewed exploration brought Europeans into more intimate contact with the Indians of the Gulf States, historians and others published many articles on their ethnology, but as the tribes were moved west of the Mississippi and the opportunities for the field worker were diminished, the time came for the ethnologist to yield to the archeologist to make his contribution to the subject. Here lies a great field for further studies, with ample work for both the historian and the archeologist.

The two areas in aboriginal America north of Mexico in which agriculture reached its highest development were the Southwest, or that part of our domain bordering on Old Mexico, and those States bordering on the Gulf of Mexico, including the mound builders from the Ohio River to the Gulf. The investigation of the southwestern or pueblo region is at present attracting many archeologists amply furnished with funds, but the Southeastern or Gulf States have been more or less overlooked. The bureau has begun an archeological reconnaissance, as far as its resources will allow, in Florida, Mississippi, Alabama, and Tennessee. Last year special attention was given to the Indian mounds at Muscle Shoals in Alabama. The work in Tennessee, southern Florida, and Mississippi, so auspiciously begun by the late Mr. W. E. Myer, has been continued by Mr. P. E. Cox, State archeologist of Tennessee. Mr. Collins, assistant curator, division of ethnology, United States National Museum, was allotted a small appropriation for preliminary

investigations and reconnaissance along the Pearl River in Mississippi, the prehistoric home of the Choctaw Tribe. The results of this work were very satisfactory.

Work on the Muskhogean culture, or the antiquities of the Gulf States, promises important results in comparative ways, and will, it is hoped, shed light on the religion of aboriginal tribes of North America. We are able to reconstruct, in a way, from historical sources, the main outlines of the Gulf culture, but the documentary references to the material culture of the Muskhogean tribes are incomplete. More information is needed regarding the ritualistic sacra, idols, ceremonial objects, and symbolism on pottery, before we can reconstruct the cultus. The material for this study is now buried in the soil, but intensive archeological work will bring it to light. In essentials, the culture of the prehistoric people of the Gulf States is such as we find universal among agricultural people in America emerging from savagery into barbarism, and the religion has much in common with that of the pueblos.

SYSTEMATIC RESEARCHES

The chief spent several weeks in reconnaissance near Florence, Ala., making excursions to several mounds in that vicinity, especially those that will be submerged when the Wilson Dam at Muscle Shoals is flooded. Mr. Gerard Fowke, who had immediate charge of the excavations in two of these mounds, obtained a considerable collection containing unique objects, among which are three rare copper ornaments, the largest ever found in the valley of the Tennessee. His report will be published later.

The chief at that time visited Montgomery, Ala., where he was most hospitably received. While there he made an examination of the Graves collection, one of the most remarkable in the State.

The chief has given advice to the National Park Service of the Interior Department on the new National Monument near Flagstaff, Ariz., which is now called by the Hopi name Wupatki. This monument includes the well preserved buildings near Black Falls on the Little Colorado, first described and figured by the writer a quarter of a century ago, at which time he recommended that they be made a National Monument, and this has now been done by proclamation of the President.

The most important collection of archeological objects received during the past year was contributed by Mr. J. C. Clarke, of Flagstaff, Ariz., custodian of the Wupatki ruin. It consists of about a hundred specimens of pottery, shell and bone implements, and other artifacts from a burial mound at Youngs Canyon excavated by workmen in the course of construction of a road near the city. These

objects were received at a time when material from that region of the Southwest was particularly desirable. The chief has prepared an illustrated report on this collection in which he calls attention to its importance. The collection contains unique specimens and is accompanied by a good catalogue by Mr. Clarke. One of the most interesting of these is a black and white pottery ladle, the handle of which is molded into a cradle containing a clay figure. There is also a finely incised head-ornament of bone, recalling those worn by the Bow priesthood at Zuñi, and suggesting similar ornaments of the Hopi idol of the war god. The collection shows evidence of cremation and urn burial.

The pottery objects are archaic, and the interiors of certain black and white food bowls are decorated with artistic figures similar to those on polychrome ware from Tokonabi, near Marsh Pass, in northern Arizona. It is probable from the pottery that the people who buried their dead at Youngs Canyon were related to a population antedating pueblos, which was scattered over a great area in Arizona from the Little Colorado north to the San Juan, and from the western boundary of the state into New Mexico. This people had no circular kivas or ceremonial rooms like those at the Mesa Verde, or the San Juan area, but they were fine potters who decorated their ware with artistic geometrical designs.

The number of written requests for information on ethnological subjects the last few years has more than doubled, and the time of the chief, as well as of the members of the staff, is correspondingly absorbed.

During the past year Mr. Earl H. Morris, under the direction of the chief of the bureau, did necessary repair work on the famous tower of the Mummy Cave House in the Canyon del Muerto, Arizona, which once contained three rooms. All woodwork on the first ceiling has been torn out; only the haggled ends of a few supports remain embedded in the walls. The cleanly peeled poles which supported the second ceiling are in place, and the third ceiling, or original roof, is still intact. It is probably the most beautiful ceiling remaining in any ruin in the Southwest, its only rivals being the coverings of one or two rooms in the north side of Pueblo Bonito, and in Spruce Tree House, Mesa Verde.

This tower has been in a dangerous condition for a long time. There was originally a retaining wall below it, rising from the very brink of the ledge, which held in place the fill of loose rock and refuse upon which the House of the Tower stands. Eventually, through erosion, all but the eastern end of this wall collapsed, probably because of the insecure foundation afforded by the abruptly sloping rock, and much of the material behind it washed over the

cliff. Later, the not infrequent winds which sweep over the cave with unbelievable force, blew out the dust and rock pebbles until the southwest corner of the tower was undermined more than 3 feet and the wall eastward weakened almost to the opposite corner.

The cracks in the west wall were wider in November, 1924, than they were a year previous. A removal of half a dozen shovelfuls from the unconsolidated mass of earth beneath the front would have loosened the large block just beyond its western end, which prevented the entire collapse of the masonry. In addition to the periodic action of the wind, each visitor who passed from the eastern to the western part of the cave trod his portion of the loose mass below the wall farther down the slope, and sent clods and pebbles rattling over the cliff. Before many years this block would have been loosened and the tower would have fallen.

During the repair work buttresses were built beneath and inclosing the large blocks under the west end of the tower and under the undermined portion of the tower, continuing back to the limit of undermining, and extending well forward of the masonry. At the junction of the two, wedges were driven to knit the new work firmly to the old. From the east end of the buttress a retaining wall was built to connect with the remnant of the old one on the brink of the ledge, and the space behind it was filled, thus providing a platform instead of the former steep slope at the southeast corner of the tower. This repair work will temporarily preserve one of the finest gems of aboriginal architecture in the entire Southwest, but it should be supplemented by the addition of "turnbuckles" anchored to the cliff and by the rebuilding of the southeast corner, which should be bonded to the east and front wall to preserve it for centuries to come.

During the fiscal year Dr. John R. Swanton, ethnologist, discovered further material bearing on the social and religious life of the Creek Indians, and this was extracted and incorporated into his papers on those subjects which are now being prepared for publication by the editor. A study also was made of the various smaller culture centers within the region covered by our present Gulf States, and a paper on the "Culture of the Southeast" was prepared as a result of this work. A short paper on the "Ethnology of the Chickasaw" was begun and carried nearly to completion, and the work of carding references to all words from the publications of early Florida missionaries in the now extinct Timucua language has been continued, and all of the words from three of the five texts and from more than half of the fourth had been extracted by the end of the year. An abbreviated handbook of the Indian tribes in the United States and Alaska was prepared to accompany a map of the same section.

Dr. Truman Michelson, ethnologist, prepared for publication a manuscript entitled "A Sauk and Fox Sacred Pack." He also wrote the Indian text of one of the great sacred packs of the Thunder gens of the Fox Indians and worked out the English version thereof. Doctor Michelson also prepared an Indian text, with English version, of the Owl dance which belongs to the Bear gens. He began translating a Fox text on the sacred pack named " Sakimage " which belongs to the Bear gens of the Fox Indians and which was taken care of by Pushetonequa, the last chief recognized by the Government. He corrected the galley proofs and the first page proofs of the fortieth annual report of the bureau, which made it possible to incorporate some additional material appurtenant to the White Buffalo Dance and Fox mortuary customs and beliefs. Doctor Michelson employed Horace Powesheik to translate 1,000 pages of Fox text which contains additional information on the Fox society known as " Those Who Worship the Little Spotted Buffalo." In June Doctor Michelson went to Tama, Iowa, to renew his researches among the Algonquian Tribe of that State. He verified the new data on the Fox society named above, and some Fox texts on the Buffalo Head Dance of the Thunder gens, obtaining much additional information of this dance and other information on the Thunder gens. A translation of the Fox text on the Sturgeon was obtained, as well as certain information on the Wolf gens.

During the fiscal year Mr. John P. Harrington, ethnologist, was engaged in the preparation for publication of his material on the excavation and early history of the Burton Mound Indian village situated at Santa Barbara, Calif., the principal rancheria of the Santa Barbara Indians. The Ambassador Hotel, which had stood on the mound for many years, and had completely barred it to scientific investigation, was destroyed by fire in the spring of 1921. By joint arrangement with the Museum of the American Indian, a thorough excavation of this mound was made, and a large and attractive collection of artifacts was obtained, as well as a mass of archeological and historical material. Mr. Harrington completed the elaboration of this material and it was submitted for publication, including maps and numerous photographs.

The old Indian name for the Burton Mound village was Syujtun. Mr. Harrington's work revealed the interesting fact, not previously pointed out, that this rancheria is mentioned four times in the " Relacion " of Juan Rodriguez Cabrillo, who discovered Alta California in 1542. Father Crespi, who kept the diary of the Portola expedition, writing in 1769, describes this village in some detail. Other early accounts tell that Yanonalit, its chief, had under him 12 other villages beside the Burton Mound. After the Indian popu-

lation was removed to the near-by Santa Barbara Mission, which was accomplished gradually after the establishment of the mission in 1782, the Franciscans erected a massive adobe warehouse on the mound, the old Indian canoe landing place in front of the mound having become "el puerto de Santa Barbara," the port of Santa Barbara. Ships visiting Santa Barbara used to get water from the large spring on the southern slope of the mound. Joseph Chapman, a young Englishman who had been captured when pirates made a raid on the California coast, purchased the mound from the Franciscans in the early twenties and started a flour mill there. In the forties the mound became the property of George Nidiver, famous otter hunter and friend of General Fremont. In the sixties the mound property was owned by Lewis T. Burton, whose name it still bears. The hotel was erected on the site in 1901. The shape and extent of the Indian village and graveyards was laboriously worked out by excavation and successive cultures traced, for the site proved to be very ancient.

In the cemetery plots, most of the bodies were buried in hunched-up positions with the head to the north, that is, in the direction of the mountain range. Many of the graves had been lined with whalebone slabs, some fine specimens of which were obtained. A great variety of belongings, large and small, had been stowed away with the bodies, and traces of matting, basketry, and wooden utensils indicated that the archeologist had been deprived of the richest treasures through decomposition in the ground. One complete wooden awl for basketry, such as is described by the early fathers, was recovered. Several of the graves contained caches of large and beautifully finished steatite bowls; these were manufactured at the steatite quarries on Santa Catalina Island and were brought up the channel for barter in Indian canoes. Screening the earth brought a surprising variety of shell and glass beads. The shell beads have been sorted and classified, and the kind of native shell used for each variety has been determined.

In 1924 the Burton Mound property was sold and subdivided. Extensive grading of the property for new streets and trenching for pipe lines of various kinds was carefully watched and reported on by Prof. D. B. Rogers, who has cooperated with Mr. Harrington in this work, and yielded new information about the stratification of the mound and a good sized additional collection of artifacts. A new hotel with large cellar excavations is about to be built on the crest of the mound and observation of these operations will doubtless add still further data to that already presented in the report.

On completing the Burton Mound paper, Mr. Harrington prepared a report on the archeology of the Santa Barbara region, dealing with

the sites adjacent to the Burton Mound along both historical and archeological lines. This is a virgin field of research and has already yielded important contributions to our knowledge of the culture sequences of the ancient California Indians of this region, which had the most specialized and highly developed culture of the State. This work illumines the fact that the early population of the channel was dense and that there were numerous wars and tribal shiftings. The section of the coast from which the islands were populated and the comparative ages of rancheria sites are also apparent from this work.

In October, 1924, Mr. R. O. Marsh brought to Washington a party of eight Tulé Indians from Panama, who remained in the city until January, 1925. This afforded opportunity for studying the language, which is a peculiarly interesting one. Possessing only 18 letters and employing them both short and long, it sounds to the ear more like Finnish than like the average American Indian language. The language may be described as melodious, simple and flexible in structure, yet very rich and extensive in vocabulary. It is spoken, with slight dialectic differences only, by a very large body of Indians, who formerly held a strip of Carribbean coast more than 240 miles long between the Canal Zone and the south of the Rio Atrato, together with the numerous fertile keys off the coast. Lists were obtained of sociological terms, names of places, plants and animals, and designations of material culture objects. Songs and speech were recorded on the dictaphone.

The Indians have been called Tulés, Cunas, Comogres, and San Blasenos. Of these names the first is preferable because it is the native name of the tribe. The word Tulé means merely "Indian," it being understood that it refers to Indians of that peculiar kind and language. It is related to the word tula, meaning 20, that is, all fingers and toes, an entire Indian.

The collection of Tulé ethnological objects donated by Mr. Marsh to the National Museum was examined with the Indian informants and the native names of the objects were recorded, together with information about their use.

The best informant in the party was Chief Igwa, who is "capitan" over some 10 keys, and is one of the leading men in the councils of the tribe. He has traveled much about the Tulé country and knows hundreds of places by name, being a good ethnogeographical informant. The chief prepared a large map showing these places.

Mr. J. N. B. Hewitt, ethnologist, left Washington, in May, 1925, for Brantford, Canada, to resume his researches among the Six (originally Five) Nations, or Tribes, of the Iroquois, the Mohawk, the Seneca, the Onondaga, the Oneida, the Cayuga, and the Tus-

carora, and also among the Munsee of the Delaware Algonquian group of languages who dwell on the Haldimand grant on the Grand River in Ontario, Canada.

Here Mr. Hewitt took up the literary interpretation, revision, and textual criticism of previously recorded voluminous Iroquoian texts relating to the Constitution of the League or Confederation of the Iroquois tribes, embodying its laws and ordinances and the rituals of the council of condolence for the deceased, and the installation of new members of the Federal and the tribal councils.

With the aid of the two best Mohawk informants available who still retain some definite knowledge of portions of the ancient institutions of the league of the Iroquois, Mr. Hewitt made a free English translation of an important one of these rituals, in addition to the free rendering of the chant of "The seven songs of farewell," and thereby recovered the symbolic reason for the very peculiar name of the former. This ritual is called Kā'rhawĕⁿ'hrā'toⁿ', in Mohawk, and Gā'hawĕⁿ'hä'di', in Onondaga, meaning, "Cast or thrown over the grand forest." When used ceremonially both these chants are separated into two portions, and the four portions alternate in their rendition in such manner that part one of the one chant is followed by part one of the other; and part two of the first is followed by part two of the second chant. But when chanted "a veil of skins" (shawls or blankets serve in modern times) must be hung across the place of assembly in such wise as to divide the mourning from the other side of the league.

Ceremonial or legislative action by the tribe or by the league is taken only through the orderly cooperation of the two sisterhoods of clans for the former, or of two sisterhoods of tribes for the latter. This dualism in the highest organic units of organization was originally based on definite mythic concepts. In either organization one sisterhood represented the female principle or the motherhood in nature, and the other sisterhood the male principle, or the fatherhood in nature. This dualism is thought to be so important that the language of the rituals and of official courtesy employ terms embodying the ethnic and mythic significance of it.

By a searching study of all symbolic terms and phrases occurring in the chants of these rituals, which impliedly might refer to the highest dramatized situation revealed by these two divided chants, the parts of which are recombined as described above, Mr. Hewitt was able to identify beyond all reasonable question the phrase "the veil of skins" with the other phrase "the grand forest." The "grand forest" represents ritualistically the totality of the forests which intervene between the lands of the mourning side of the league and those of the other side, represented as symbolically intact in

mind. It must not be overlooked that either the mother side or the father side may be the "mourning side"; the designation, of course, alternates between the two sides, depending on the fact of the loss of one or more of the members of the Federal council belonging to it at any given time.

The sisterhood of tribes functioned by the independent action of its constituent institutional units—every several tribe. In turn every tribe functioned through the organic units of its own internal organization—each several clan, to execute its prescribed part in the larger Federal action, which otherwise would not be authentic or authoritative; so that a clan or an individual in a clan, in special cases involving personal rights, might prevent vital Federal action. So personal rights were abundantly safeguarded.

Mr. Hewitt purchased a very fine specimen husk mask of the Corn Mother, with a short explanatory text.

Mr. Hewitt also made a reconnaissance trip to the Chippewa of Garden River, Canada, for the purpose of expanding and deepening his knowledge of certain Chippewa texts, recorded in 1921 by him from the dictation of Mr. George Gabaoosa, of Garden River, and also to obtain data in regard to the derivation of two very important proper names, Chippewa and Nanabozho (appearing in literature also as Neabojo, Menaboju, and Wenaboju), and also to inform himself as to the ethnologic value to be placed on the fast-fading remains of the ethnic culture of this and cognate tribes in like situations and antecedents. The myth of Mudjikewis, "The First-Born (on Earth)," commonly called the story of Nanabozho (i. e., *Inābi'oji'o'*), remarkable for beauty and comprehensiveness, details the circumstances which gave rise to the name "Nanabozho." In that recital the name appears as *Inābi'oji'o'* and means, "Created, or formed, by the look (of the Great Father spirit)."

The name Chippewa appears in literature in no less than 97 variant spellings, with a half dozen or more unsatisfactory definitions. But to those who first gave the name Chippewa (in its native, not Europeanized, form) to these people picture-writing was ethnically distinctive and characteristic of them as the well-known birch-bark records of these people amply testify. So the name Chippewa signifies literally, "Those who make pictographs," and thus emphasizes one of the distinctive arts of these peoples.

The Seneca in Missouri and Oklahoma were visited for the express purpose of identifying them tribally, if the available information made this possible. Since the middle of the eighteenth century these Seneca have not been closely affiliated with the Seneca Tribe of New York State and Canada. There has been expressed doubt that these western Seneca had the right to this name. But after

visiting and interviewing many families of these western Seneca dwelling about Seneca, Mo., and Miami and Picher, Okla., Mr. Hewitt was convinced that they are mainly emigrants from the parent Seneca Tribe of New York and Canada and from the Cayuga of these last-named places; naturally, there are also some families of other Iroquoian Tribes, such as the Wyandot and possibly the Conestoga. A porcupine clan and a fox clan were reported. The last was a Conestoga clan.

Mr. Francis La Flesche, ethnologist, completed his paper on two versions of the child-naming rite of the Osage Tribe. The first version belongs to the In-gthon-ga or Puma gens, and the second to the Tsi-zhu Wa-shta-ge or Tsi-zhu Peacemaker gens. Each gens has its own version of the rite and no other gens can use it without permission. This paper contains 201 typewritten pages and 20 illustrations. Mr. La Flesche spent a part of the month of May and all of June, 1925, among the Osages. In the early part of this visit he and his assistant, Ku-zhi-si-e, a full-blood Osage, undertook the laborious task of properly recording the gentile personal names used by the full-blood members of the tribe and by some of the mixed bloods. Superintendent J. George Wright, of the Osage Agency, kindly permitted them to use as a guide in doing this work an annuity pay roll of the third and fourth quarters of the year 1877, which was found in the files of his office. This roll contains about 1,900 Indian names, most of them misspelled. Besides correcting the spelling of the names, Mr. La Flesche and his assistant added to the name of each annuitant the name of his or her gens. Ku-zhi-si-e was much amused to learn that his boy name, "I-tse-tha-gthin-zhi," was carried on the pay roll as "E-stah-o-gra-she," and that the boy name of his friend Wa-non-she-zhin-ga was put on the rolls as Me-pah-scah, instead of "In-bae-sca," the correct name.

When the work of revising the names on the annuity roll was concluded, Ku-zhi-si-e drove over the hills on his farm with Mr. La Flesche and showed him many wild plants which were useful to the Indians as medicine or food. Some of these plants were woven into large mats for house covering, and into rugs to spread on the floor of the house to sit upon.

Wo-non-she-zthin-ga (the chief of the tribe) also took tramps among the trees on his farm with Mr. La Flesche, and showed him a number of trees and explained to him their uses, and gave to him their native names, which he recorded. This man pointed out a tree which he called "Zhon-sa-gi," hard wood. The saplings of this tree he said were used for the frames of the houses. When green the wood was easily cut with a knife or ax, but when sea-

soned it was very hard to cut. The chief cut a branch from a small tree and carried it with him when he and Mr. La Flesche returned to the house. The chief whittled off some of the bark from the branch and dipped the shavings in a glass of water and the water quickly became blue like indigo. Mr. Paul C. Standley identified this tree as the blue ash, or *Fraxinus quadrangulata.*

SPECIAL RESEARCHES

The following manuscripts of Indian music have been purchased during the fiscal year from Miss Francis Densmore: "War, wedding and social songs of the Makah Indians," "Songs connected with Makah feasts and dances," "Music and customs of the Tulé Indians of Panama," "Songs and instrumental music of the Tulé Indians of Panama," "Songs for children and material culture of the Makah Indians," and 17 mathematical group analyses of 167 Papago songs, according to the method of such analyses in previous work. This material (apart from the group analyses) comprises 150 pages of text, numerous photographic illustrations, and the transcriptions of 69 songs, together with the original phonograph records and descriptive and tabulated analyses of individual songs. The last named are the analyses from which the mathematical analyses are made, these showing the peculiarities of the songs of an entire tribe with results expressed in percentages. These in turn form the basis for comparative tables, which show the characteristics of the music of different tribes. Such tables of comparison in "Mandan and Hidatsa Music" comprise 820 songs collected among six tribes, and material awaiting publication will add more than 500 songs to this number, including songs of widely separated tribes. It seems possible that these tables may show a connection between the physical environment of the Indians and the form assumed by their songs, as interesting contrasts appear in the songs of different tribes.

The final paper on the Makah Indians included a description of the uses of 26 plants in food, medicine, and dye. Specimens of the plants had been obtained on the reservation, and their botanical indentification was made by Mr. Paul C. Standley, of the United States National Museum. The Makah were head hunters and a detailed account of their war customs was presented. The caste system prevailed in former days and families of the upper class had wealth and leisure. The wedding customs were marked by festivity and by physical contests, the songs of which were submitted.

The presence in Washington of a group of Tulé Indians from the Province of Colon, Panama, made possible a study of forms of primi-

tive music which, it is believed, have not hitherto been described. The Tulé Indians are unique in that they do not pound on a drum, a pole, or any other object. Their favorite musical instrument is the "pan pipe" of reeds. Two men usually play these pipes, sounding alternate tones. The music of these pan pipes was phonographically recorded and transcribed as nearly as is possible in musical notation. An instrument which, as far as known, has not been previously observed, is a reed flute having two finger holes but no "whistle opening." The upper end of the reed is held inside the mouth, possibly touching the roof of the mouth, and for this reason the instrument is designated as a "mouth flute." A gourd rattle, conch shell horn, and bone whistle complete the musical instruments of these Indians.

The words of the songs narrate a series of events, such as the preparation for a wedding and a description of the festivity, or the illness and death of a man, followed by "talking to his spirit." Chief Igwa Nigidibippi, who recorded the songs, was a trained singer.

EDITORIAL WORK AND PUBLICATIONS

The editing of the publications of the bureau was continued through the year by Mr. Stanley Searles, editor, assisted by Mrs. Frances Nichols, editorial assistant. The status of the publications is presented in the following summary.

PUBLICATIONS ISSUED

Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians, by Walter E. Roth. 745 pp., 183 pls., 341 figs.

Thirty-ninth Annual Report. Accompanying paper: The Osage Tribe; The Rite of Vigil, by Francis La Flesche. 636 pp., 17 pls., 4 figs. (Received July 13, 1925.)

Bulletin 78. Handbook of the Indians of California, by A. L. Kroeber. x, 995 pp., 83 pls., 78 figs. (Received July 17, 1925.)

PUBLICATIONS IN PRESS OR IN PREPARATION

Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox Indian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society Known as "Those Who Worship the Little Spotted Buffalo"; The Traditional Origin of the Fox Society Known as "The Singing Around Rite" (Michelson).

Forty-first Annual Report. Accompanying papers: Coiled Basketry in British Columbia and Surrounding Region (Boas, assisted by Haeberlin, Roberts, and Teit); Two Prehistoric Villages in Middle Tennessee (Myer).

Forty-second Annual Report. Accompanying papers: Social Organization and Social Usages of the Indians of the Creek Confederacy; Religious Beliefs and Medical Practices of the Creek Indians; The Culture of the Southeast (Swanton).

DISTRIBUTION OF PUBLICATIONS

The distribution of the publications of the bureau has been continued under the immediate charge of Miss Helen Munroe, assisted by Miss Emma Powers. Publications were distributed as follows:

Report volumes and separates	3,426
Bulletins and separates	3,458
Contributions to North American ethnology	38
Introductions	5
Miscellaneous publications	427
	7,354

As compared with the fiscal year ended June 30, 1924, there was a decrease of 6,609 publications distributed. This was undoubtedly due not to a decrease in applications, but to the fact that only one publication was distributed during the year just ended, whereas four publications were issued in the preceding fiscal year and distributed to the mailing list.

ILLUSTRATIONS

Mr. DeLancey Gill, illustrator, with the assistance of Mr. Albert Sweeney, continued the preparation of the illustrations of the bureau. A summary of the work follows:

Illustrations mounted, retouched, and made ready for engraving	927
Drawing of objects, maps, etc., prepared	38
Portraits of visiting Indians (2 Kiowa, 8 Tulé)	27
Negative films from field exposures	54
Photostat prints from books and manuscripts	178
Negatives of ethnologic and archeologic subjects	273
Photographic prints for distribution and office use	1,649

On account of the large amount of illustrative work, reclassification of the large collection of negatives has not progressed as rapidly as last year. About 7,000 negatives have so far been catalogued.

LIBRARY

The reference library has continued under the immediate care of Miss Ella Leary, librarian, assisted by Mr. Thomas Blackwell. During the year 480 books were accessioned. Of these 100 were acquired by purchase, 280 by gift and exchange, and 100 by binding of periodicals. The periodicals currently received number about 975, of which 40 are by subscription, the remainder through exchange. The library has also received 187 pamphlets. The aggregate number of volumes in the library at the close of the year was 26,101; of pamphlets, 15,512; also several thousand unbound periodicals. The Library of Congress, officers of the executive departments, and out-of-town students have made use of the library through frequent loans during the year.

COLLECTIONS

The following collections, purchased or acquired by members of the bureau or by those detailed in connection with its researches, have been transferred to the United States National Museum:

83522. Small collection of ethnologia purchased by the bureau from Miss Emily S. Cook.

84260. Collection of archeological material secured by Mr. D. L. Reichard for the bureau, from Berryville, Va.

84444. Small stone celt, and a lot of pottery bowl ornaments from Porto Rico, presented to the bureau by Mrs. Alice de Santiago, Barceloneta, P. R.

85018. Collection of archeological material collected for the bureau by Gerard Fowke from mounds near Town Creek, Ala.

85019. Archeological material collected for the bureau by Dr. J. Walter Fewkes, from mounds near St. Petersburg, Fla.

85319. Archeological material collected for the bureau by Gerard Fowke, from mounds near Town Creek, Ala., on the site of the Wilson Dam, Muscle Shoals.

85343. Stone bird pipe found near Hydes Ferry, on the Cumberland River, about 7 miles below Nashville, Tenn.

85344. Five complete skulls and fragmentary remains of about twelve crania collected by Gerard Fowke from Hog Island Mound, near Town Creek, Ala.

Five skulls collected by Earle O. Roberts, Harrah, Wash.

85780. Collection of skeletal material secured by Gerard Fowke at the Alexander Mound near Courtland, Ala.

85781. Collection of skeletal material which was unearthed 1¼ miles north of Boynton, Fla., and sent to the bureau by Mr. E. S. Jackson, of Palm Beach, Fla.

85824. Collection of archeological objects secured by Mr. J. O. Sanderson, of Courtland, Ala., and purchased by the bureau.

85856. Two pipes, one of steatite and the other of marble, collected for the bureau by Gerard Fowke from the Alexander Mound in Lawrence County, Ala.

87297. Collection of archeological material secured for the bureau at Youngs Canyon, about 18½ miles east of Flagstaff, Ariz., by Mr. J. C. Clarke, of Flagstaff.

83949. Human remains from Weeden Island, St. Petersburg, Fla., secured by the chief of the bureau during the winter of 1923–24.

MISCELLANEOUS

Clerical: The correspondence and other clerical work of the office has been conducted by Miss May S. Clark, clerk to the chief. Mr. Anthony W. Wilding, typist, has been engaged in copying manuscripts and in various duties connected with the office of the chief. Miss Julia Atkins, stenographer and typist, resigned October 15, 1924. Mrs. A. H. Kitchen was appointed temporarily December 13, 1924, for the three months, the appointment terminating March 13, 1925. Miss Mae W. Tucker was appointed temporarily May 1, 1925, as stenographer and typist.

Respectfully submitted.

J. WALTER FEWKES, *Chief.*

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 5

REPORT ON THE INTERNATIONAL EXCHANGES

SIR: I have the honor to submit the following report on the operations of the International Exchange Service during the fiscal year ending June 30, 1925:

The congressional appropriation allowed for the support of the exchange service during the year 1925 was $49,550, $6,550 more than the amount granted for the fiscal year 1924. Of this increase about half was to cover the extra amount necessary for reclassification of salaries. The usual appropriation of $200 for printing and binding was granted by Congress. There was collected by the Institution on account of repayment from departmental and other establishments $4,900.22, making the total resources available for carrying on the Smithsonian system of exchanges for the fiscal year 1925 $54,650.22.

During the year the total number of packages handled was 468,731, an increase over the number for the preceding year of 8,073. These packages weighed a total of 506,164 pounds, a loss of 60,943 pounds. This decrease in weight is due to the smaller size of packages of publications received for transmission through the service.

The number and weight of the packages of different classes are indicated in the following table:

	Packages		Weight	
	Sent	Received	Sent	Received
			Pounds	*Pounds*
United States parliamentary documents sent abroad	198, 862	----------	86, 337	----------
Publications received in return for parliamentary documents	----------	4, 702	----------	12, 851
United States departmental documents sent abroad	142, 911	----------	158, 029	----------
Publications received in return for departmental documents	----------	5, 734	----------	20, 377
Miscellaneous scientific and literary publications sent abroad	90, 797	----------	164, 018	----------
Miscellaneous scientific and literary publications received from abroad for distribution in the United States	----------	25, 725	----------	64, 552
	432, 570	36, 161	408, 384	97, 780
Grand total	468, 731		506, 164	

The value of the material passing through the International Exchange Service cannot be estimated by the mere number of packages handled. Many of the packages each contain a number of valuable scientific publications. It may be estimated that annually there pass through the service both to and from foreign countries, considerably more than a million publications.

Although the United States Government sends abroad more publications than it receives in exchange, the disparity is not so great as appears in the above table, for many foreign publications are received direct by mail by correspondents in this country.

Latvia, which joined both conventions in 1924, has established a service of international exchanges under the state library at Riga.

The total number of boxes used in despatching consignments was 2,325. This was a decrease of 139 from the preceding year and is accounted for by the smaller size of the packages received for transmission abroad, as referred to above. Of the total number of boxes shipped abroad, 268 were for the foreign depositories of full sets of United States governmental documents, and the remainder (2,057) was for distribution to miscellaneous establishments and individuals. While the Smithsonian Exchange Service, as a rule, transmits its consignments to other countries in boxes, sometimes the packages that accumulate for a particular country are not of sufficient bulk to warrant their transmission by freight, and they are mailed directly to their destinations. In addition, quite a number of packages are forwarded by mail to remote places which cannot be reached through the existing exchange agencies. During the year the number of packages sent abroad in this manner was 39,499.

The number of boxes sent to each country is given in the following table:

Consignments of exchanges for foreign countries

Country	Number of boxes	Country	Number of boxes
Argentine Republic	43	Latvia	6
Austria	54	Lithuania	3
Belgium	58	Mexico	5
Bolivia	2	Netherlands	38
Brazil	34	New South Wales	29
British Colonies	11	New Zealand	23
Bulgaria	1	Nicaragua	1
Canada	20	Norway	33
Chile	22	Palestine	4
China	50	Paraguay	3
Chosen	6	Peru	19
Colombia	18	Poland	28
Costa Rica	12	Portugal	19
Cuba	5	Queensland	16
Czechoslovakia	80	Roumania	14
Danzig	3	Russia	65
Denmark	41	Salvador	2
Ecuador	2	Siam	3
Egypt	12	South Australia	29
Esthonia	10	Spain	36
Finland	20	Sweden	70
France	174	Switzerland	68
Germany	289	Tasmania	11
Great Britain and Ireland	303	Turkey	8
Greece	12	Union of South Africa	37
Guatemala	2	Uruguay	14
Honduras	2	Venezuela	10
Hungary	39	Victoria	46
India	42	Western Australia	11
Italy	98	Yugoslavia	17
Jamaica	2		
Japan	116	Total	2,325

:cordance with the terms of a convention concluded at Brus-
ırch 15, 1886, and under authority granted by Congress in
ions approved March 2, 1867, and March 2, 1901, 58 full sets
ted States official documents and 40 partial sets are now sent
ı the exchange service regularly to depositories abroad. This
luction of one full set from last year and an addition of two
sets. New Zealand requested that a partial set be sent to
neral Assembly Library instead of a full set. The Stadt-
ıek of the Free City of Danzig was added to the list of
eceiving partial sets. The number of full and partial sets
rnmental documents forwarded to foreign depositories there-
98. The total number provided by law for this purpose
: the use of the Library of Congress has been increased by
Congress approved March 3, 1925, from 100 to 125.

:onvention referred to above, which was the first of two con-
s concluded at Brussels March 15, 1886, and is referred
onvention A, provides for the international exchange of of-
ocuments and scientific and literary publications. The sec-
nvention, referred to as Convention B, provides for the
rliamentary exchange of the official journal as well as of
liamentary annals and documents. Convention A was rati-
the United States, Belgium, Brazil, Italy, Portugal, Serbia
ugoslavia), Spain and Switzerland. Convention B was rati-
the same countries except Switzerland. Since the ratifica-
the Brussels conventions the following countries have signi-
ir adherence thereto in the order in which they are listed:

uguay—both conventions, 1889.
gentine Republic—convention A, 1889.
raguay—convention A, 1889.
:choslovakia—both conventions, 1919.
land—convention A, 1920; convention B, 1921.
umania—both conventions, 1923.
ngary—both conventions, 1923.
minican Republic—both conventions, 1923.
tvia—both conventions, 1924.
:e City of Danzig—both conventions, 1924.

:refore will be seen that 18 countries have thus far joined
ıssels conventions of 1886. In order to give consideration
uestion of having a larger number of countries adhere to
ıange conventions, the committee on intellectual cooperation
League of Nations called together at Geneva in the summer
a committee of experts on the international exchange of
:ions, a brief report of which is given elsewhere.

At the request of the Governments of Finland and the United Provinces of Agra and Oudh, the depositories of partial sets of official documents have been changed from the Central Library of the State to the Parliamentary Library, and from the Colonial Secretary's office to the University of Allahabad, respectively.

The names of the depositories in foreign countries are given in the following list:

DEPOSITORIES OF FULL SETS

ARGENTINE REPUBLIC: Ministerio de Relaciones Exteriores, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
BADEN: Universitäts-Bibliothek, Freiburg. (Depository of the State of Baden.)
BAVARIA: Staats-Bibliothek, Munich.
BELGIUM: Bibliothèque Royale, Brussels.
BRAZIL: Bibliotheca Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca de la Universidad Nacional de la Plata. (Depository of the Province of Buenos Aires.)
CANADA: Library of Parliament, Ottawa.
CHILE: Biblioteca del Congreso Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
COLOMBIA: Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA: Secretaría de Estado (Asuntos Generales y Canje Internacional), Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Kongelige Bibliotheket, Copenhagen.
ENGLAND: British Museum, London.
ESTHONIA: Riigiraamatukogu (State Library), Reval.
FRANCE: Bibliothèque Nationale, Paris.
GERMANY: Deutsche Reichstags-Bibliothek, Berlin.
GLASGOW: City Librarian, Mitchell Library, Glasgow.
GREECE: Bibliothèque Nationale, Athens.
HUNGARY: Hungarian House of Delegates, Budapest.
INDIA: Imperial Library, Calcutta.
IRISH FREE STATE: National Library of Ireland, Dublin.
ITALY: Biblioteca Nazionale Vittorio Emanuele, Rome.
JAPAN: Imperial Library of Japan, Tokyo.
LONDON: London School of Economics and Political Science. (Depository of the London County Council.)
MANITOBA: Provincial Library, Winnipeg.
MEXICO: Biblioteca Nacional, Mexico.
NETHERLANDS: Bibliotheek van de Tweede Kamer der Staten-Generaal. The Hague.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NORTHERN IRELAND: Ministry of Finance, Belfast.
NORWAY: Universitets-Bibliotek, Oslo. (Depository of the Government of Norway.
ONTARIO: Legislative Library, Toronto.

PARIS: Préfecture de la Seine.
PERU: Biblioteca Nacional, Lima.
POLAND: Bibliothèque du Ministère des Affaires Etrangères, Warsaw.
PORTUGAL: Bibliotheca Nacional, Lisbon.
PRUSSIA: Preussische Staatsbibliothek, Berlin, N. W. 7.
QUEBEC: Library of the Legislature of the Province of Quebec, Quebec.
QUEENSLAND: Parliamentary Library, Brisbane.
RUSSIA: Shipments temporarily suspended.
SAXONY: Sächsische Landesbibliothek, Dresden—N. 6.
SOUTH AUSTRALIA: Parliamentary Library, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SWEDEN: Kungliga Biblioteket, Stockholm.
SWITZERLAND: Bibliothèque Centrale Fédérale, Berne.
SWITZERLAND: Library of the League of Nations, Palace of Nations, Quai de Leman, Geneva.
TASMANIA: Parliamentary Library, Hobart.
TURKEY: Shipments temporarily suspended.
UNION OF SOUTH AFRICA: State Library, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
VENEZUELA: Biblioteca Nacional, Caracas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
WURTTEMBERG: Landesbibliothek, Stuttgart.
YUGOSLAVIA: Ministère des Affaires Étrangères, Belgrade.

DEPOSITORIES OF PARTIAL SETS

ALBERTA: Provincial Library, Edmonton.
ALSACE-LORRAINE: Bibliothèque Universitaire et Régionale de Strasbourg, Strasbourg.
BOLIVIA: Ministerio de Colonización y Agricultura, La Paz.
BRAZIL: Bibliotheca da Assemblea Legislativa do Estado do Rio de Janeiro, Nictheroy.
BREMEN: Senatskommission für Reichs- und Auswärtige Angelegenheiten.
BRITISH COLUMBIA: Legislative Library, Victoria.
BRITISH GUIANA: Government Secretary's Office, Georgetown, Demerara.
BULGARIA: Ministère des Affaires Étrangères, Sofia.
CEYLON: Colonial Secretary's Office (Record Department of the Library), Colombo.
DANZIG: Stadtbibliothek, Free City of Danzig.
ECUADOR: Biblioteca Nacional, Quito.
EGYPT: Bibliothèque Khédiviale, Cairo.
FINLAND: Parliamentary Library, Helsingfors.
GUATEMALA: Secretary of the Government, Guatemala.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port-au-Prince.
HAMBURG: Senatskommission für die Reichs- und Auswärtigen Angelegenheiten.
HESSE: Landesbibliothek, Darmstadt.
HONDURAS: Secretary of the Government, Tegucigalpa.
JAMAICA: Colonial Secretary, Kingston.
LATVIA: Bibliothèque d'Etat, Riga.
LIBERIA: Department of State, Monrovia.

LOURENÇO MARQUEZ: Government Library, Lourenço Marquez.
LÜBECK: President of the Senate.
MADRAS, PROVINCE OF: Chief Secretary to the Government of Madras, Public Department, Madras.
MALTA: Minister for the Treasury, Valetta.
NEW BRUNSWICK: Legislative Library, Fredericton.
NEWFOUNDLAND: Colonial Secretary, St. John's.
NEW ZEALAND: General Assembly Library, Wellington.
NICARAGUA: Superintendente de Archivos Nacionales, Managua.
NOVA SCOTIA: Provincial Secretary of Nova Scotia, Halifax.
PANAMA: Secretaría de Relaciones Exteriores, Panama.
PARAGUAY: Sección Canje Internacional de Publicaciones del Ministerio de Relaciones Exteriores, Estrella 563, Asunción.
PRINCE EDWARD ISLAND: Legislative Library, Charlottetown.
ROUMANIA: Academia Romana, Bukharest.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SASKATCHEWAN: Government Library, Regina.
SIAM: Department of Foreign Affairs, Bangkok.
STRAITS SETTLEMENTS: Colonial Secretary, Singapore.
UNITED PROVINCES OF AGRA AND OUDH: University of Allahabad, Allahabad.
VIENNA: Bürgermeister-Amt der Stadt Wien.

INTERPARLIAMENTARY EXCHANGE OF OFFICIAL JOURNAL

The interparliamentary exchange is conducted by the Smithsonian Institution in behalf of the United States Government under the authority granted in a congressional resolution approved March 4, 1909, the object of that resolution being to carry into effect the provisions of the second convention concluded at Brussels in 1886, providing for the immediate exchange of the Official Journal, the United States being one of the signatories to that convention.

The immediate exchange has been entered into during the year with India and the Free City of Danzig. The names of the establishments to which the daily issue of the Congressional Record is mailed are given below:

ARGENTINE REPUBLIC: Biblioteca del Congreso Nacional, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bibliothek des Nationalrates, Wien I.
BADEN: Universitäts-Bibliothek, Heidelberg.
BELGIUM: Bibliothèque de la Chambre des Représentants, Brussels.
BOLIVIA: Câmara de Diputados, Congreso Nacional, La Paz.
BRAZIL: Bibliotheca do Congresso Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca del Senado de la Provincia de Buenos Aires, La Plata.
CANADA:
Library of Parliament, Ottawa.
Clerk of the Senate, Houses of Parliament, Ottawa.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.

CUBA:
Biblioteca de la Cámara de Representantes, Habana.
Biblioteca del Senado, Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DANZIG: Stadtbibliothek, Danzig.
DENMARK: Rigsdagens Bureau, Copenhagen.
ESTHONIA: Riigiraamatukogu (State Library), Reval.
FRANCE:
Bibliothèque de la Chambre des Députés, au Palais Bourbon, Paris.
Bibliothèque du Sénat, au Palais du Luxembourg, Paris.
GREAT BRITAIN: Library of the Foreign Office, Downing Street, London, S. W. 1.
GREECE: Library of Parliament, Athens.
GUATEMALA: Biblioteca de la Oficina Internacional Centro-Americana, 8a Calle Poniente No. 1, Ciudad de Guatemala.
HAITI: Secrétaire d'État des Relations Extérieures, Port-au-Prince.
HONDURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
HUNGARY: Bibliothek des Abgeordnetenhauses, Budapest.
INDIA: Legislative Library, Simla.
ITALY:
Biblioteca della Camera dei Deputati, Palazzo di Monte Citorio, Rome.
Biblioteca del Senato del Regno, Palazzo Madama, Rome.
LATVIA: Library of the Saeima, Riga.
LIBERIA: Department of State, Monrovia.
NEW SOUTH WALES: Library of Parliament, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Stortingets Bibliotek, Oslo.
PERU: Câmara de Diputadoes, Congreso Nacional, Lima.
POLAND: Monsieur le Ministre des Affaires Étrangères, Warsaw.
PORTUGAL: Bibliotheca do Congresso da Republica, Lisbon.
PRUSSIA: Bibliothek des Abgeordnetenhauses, Prinz-Albrechtstrasse 5, Berlin, S. W. 11.
QUEENSLAND: Chief Secretary's Department, Brisbane.
ROUMANIA: Bibliothèque de la Chambre des Députés, Bukharest.
SPAIN:
Biblioteca del Congreso de los Diputados, Madrid.
Biblioteca del Senado, Madrid.
SWITZERLAND:
Bibliothèque de l'Assemblée Fédérale Suisse, Berne.
Library of the League of Nations, Geneva.
TRANSVAAL: State Library, Pretoria.
UNION OF SOUTH AFRICA: Library of Parliament, Cape Town.
URUGUAY: Biblioteca de la Câmara de Representantes, Montevideo.
VENEZUELA: Câmara de Diputados, Congreso Nacional, Caracas.
WESTERN AUSTRALIA: Library of Parliament of Western Australia, Perth.
YUGOSLAVIA: Library of the Skupshtina, Belgrade.

There are at present 43 different foreign States or Provinces with which the immediate exchange of the Official Journal is carried on. To some of the countries two copies of the Congressional Record are forwarded—one to the upper and one to the lower house of Parliament. The total number of records transmitted is 49. The number of copies of the record set aside by law for this purpose is 100.

FOREIGN EXCHANGE AGENCIES

A complete list of the foreign exchange agencies or bureaus is given below:

ALGERIA, *via* France.
ANGOLA, *via* Portugal.
ARGENTINE REPUBLIC: Comisión Protectora de Bibliotecas Populares, Calle Córdoba 931, Buenos Aires.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
AZORES, *via* Portugal.
BELGIUM: Service Belge des Échanges Internationaux, Rue des Longs-Chariots 46, Brussels.
BOLIVIA: Oficina Nacional de Estadística, La Paz.
BRAZIL: Serviço de Permutações Internacionaes, Bibliotheca Nacional, Rio de Janeiro.
BRITISH COLONIES: Crown Agents for the Colonies, London.
BRITISH GUIANA: Royal Agricultural and Commercial Society, Georgetown.
BRITISH HONDURAS: Colonial Secretary, Belize.
BULGARIA: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
CANARY ISLANDS, *via* Spain.
CHILE: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
CHINA: American-Chinese Publication Exchange Department, Shanghai Bureau of Foreign Affairs, Shanghai.
CHOSEN: Government General, Keijo.
COLOMBIA: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CZECHOSLOVAKIA: Service Tchécoslovaque des Échanges Internationaux, Bibliothèque de l'Assemblée Nationale, Prague 1–79.
DANZIG: Amt für den Internationalen Schriftenaustausch der Freien Stadt Danzig, Stadtbibliothek, Danzig.
DENMARK: Kongelige Danske Videnskabernes Selskab, Copenhagen.
DUTCH GUIANA: Surinaamsche Koloniale Bibliotheek, Paramaribo.
ECUADOR: Ministerio de Relaciones Exteriores, Quito.
EGYPT: Sent by mail.
ESTHONIA: Riigiraamatukogu (State Library), Reval.
FINLAND: Delegation of the Scientific Societies of Finland, Helsingfors.
FRANCE: Service Français des Échanges Internationaux, 110 Rue de Grenelle, Paris.
GERMANY: Amerika-Institut, Universitätstrasse 8, Berlin, N. W. 7.
GREAT BRITAIN AND IRELAND: Messrs. Wheldon & Wesley, 2, 3, and 4 Arthur St., New Oxford St., London, W. C. 2.
GREECE: Bibliothèque Nationale, Athens.
GREENLAND, *via* Denmark.
GUATEMALA: Instituto Nacional de Varones, Guatemala.
HAITI: Secrétaire d'État des Relations Extérieures, Port-au-Prince.
HONDURAS: Biblioteca Nacional, Tegucigalpa.
HUNGARY: Service Hongrois des Échanges Internationaux, Musée National, Budapest, VIII.
ICELAND, *via* Denmark.
INDIA: Superintendent of Stationery, Bombay.

ALY: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio Emanuele, Rome.
MAICA: Institute of Jamaica, Kingston.
PAN: Imperial Library of Japan, Tokyo.
VA, *via* Netherlands.
TVIA: Service des Échanges Internationaux, Bibliothèque d'État de Lettonie, Riga.
BERIA: Bureau of Exchanges, Department of State, Monrovia.
THUANIA: Sent by mail.
URENÇO MARQUEZ, *via* Portugal.
XEMBURG, *via* Belgium.
DAGASCAR, *via* France.
DEIRA, *via* Portugal.
ZAMBIQUE, *via* Portugal.
THERLANDS: Bureau Scientifique Central Néerlandais, Bibliothèque de l'Académie Technique, Delft.
W SOUTH WALES: Public Library of New South Wales, Sydney.
W ZEALAND: Dominion Museum, Wellington.
CARAGUA: Ministerio de Relaciones Exteriores, Managua.
RWAY: Universitets-Bibliotek, Oslo.
NAMA: Secretaría de Relaciones Exteriores, Panama.
RAGUAY: Sección Canje Internacional de Publicaciones del Ministerio de Relaciones Exteriores, Estrella 563, Asuncion.
RU: Oficina de Reparto, Depósito y Canje Internacional de Publicaciones, Ministerio de Fomento, Lima.
LAND: Service Polonais des Echanges Internationaux, Bibliothèque du Ministère des Affaires Étrangères, Warsaw.
RTUGAL: Secção de Trocas Internacionaes, Bibliotheca Nacional, Lisbon.
EENSLAND: Bureau of Exchanges of International Publications, Chief Secretary's Department, Brisbane.
UMANIA: Bureau des Echanges Internationaux, Institut Meteorologique Central, Bukharest.
SSIA: Academy of Sciences, Leningrad.
LVADOR: Ministerio de Relaciones Exteriores, San Salvador.
AM: Department of Foreign Affairs, Bangkok.
UTH AUSTRALIA: Public Library of South Australia, Adelaide.
AIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
MATRA, *via* Netherlands.
EDEN: Kongliga Svenska Vetenskaps Akademien, Stockholm.
ITZERLAND: Service Suisse des Échanges Internationaux, Bibliothèque Centrale Fédérale, Berne.
RIA: American University of Beirut.
SMANIA: Secretary to the Premier, Hobart.
NIDAD: Royal Victoria Institute of Trinidad and Tobago, Port-of-Spain.
NIS, *via* France.
RKEY: Robert College, Constantinople.
ION OF SOUTH AFRICA: Government Printing Works, Pretoria, Transvaal.
UGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
NEZUELA: Biblioteca Nacional, Carácas.
TORIA: Public Library of Victoria, Melbourne.
STERN AUSTRALIA: Public Library of Western Australia, Perth.
GOSLAVIA: Académie Royale Serbe des Sciences et des Arts, Belgrade.

COMMITTEE OF EXPERTS ON THE INTERNATIONAL EXCHANGE OF PUBLICATIONS, GENEVA, SWITZERLAND

The committee on intellectual cooperation of the League of Nations called together at Geneva July 17–19, 1924, a committee of experts on the international exchange of publications, of which Prof. O. de Halecki, of the University of Warsaw, was made chairman. Mr. H. W. Dorsey, chief clerk of the Institution, who has been closely in touch with the exchange service for many years, was sent as the Smithsonian representative. The other members of the committee were Mr. J. Luchaire, Inspector General of Public Education of France; Mr. E. Bacha, Director of the Belgian Service of International Exchanges; Mr. V. Benedetti, Director of the Italian Service of International Exchanges; Mr. B. M. Headicar, Librarian of the London School of Economics and Political Science.

The above committee, without making any change in the Brussels convention of 1886, recommended an additional protocol, enabling the states that are not yet parties to the convention to adhere thereto with reservations. The resolutions of the committee of experts regarding this matter are as follows:

The states which have not yet adhered to the convention of 1886 and might consider the obligation carried in Article II as too burdensome, either on account of the very great number of their official publications or on account of their financial condition, or on any other ground, may accept the convention with the reservation that they would agree with each nation as to the number of publications to be sent. The exchange of those states with states that have unreservedly adhered to the convention would be governed by the same principle.

The Belgian Government is asked kindly to make a text of the foregoing resolution known to the states parties to the convention of March 15, 1886. These states will at the same time be informed that partial adhesions that may occur under this resolution would be made known to them by the same Government as fast as they took place, the said adhesions becoming compulsory only as between the said parties that accepted them and the adhering states.

All applications for partial adhesion would be made known to the Belgian Government and notified by that Government to every one of the states parties to the convention of 1886, including those who shall have been allowed to give partial adhesion to that treaty, each one of the States being at the same time requested to advise the said Government within one year after the date of such notification whether, so far as it is concerned, it has accepted the partial adhesion. Any state which shall not have notified its acceptance within that time shall be considered as refusing to accept the adhesion.

These resolutions were brought to the attention of this Government by the Belgian Government. The Department of State referred the matter to the Smithsonian Institution, which replied that it saw

no objection to the assent of this Government to the principle of limited adhesions to the exchange convention of 1886. It was pointed out, however, that as the principle of partial exchange of official documents has been adopted by the United States Government, the proposed reservations to the convention would not materially affect the exchange conditions now existing between the United States and other countries.

The committee of experts considered not only the possibility of improving the exchange of official documents as referred to above, but also the best way of encouraging the exchange of scientific and literary works. The committee's recommendations are embodied in the following extract from a draft convention:

ARTICLE I. Independently of the obligations which might result for each of them from the previous conventions relative to the exchange of publications, the high contracting parties undertake to exchange, as fast as they are published, at least one copy—

(*a*) All the current repertories of national bibliography of a general character.

(*b*) As far as possible documents of every kind giving information on the recent acquisitions of their scientific libraries.

ART. II. Each contracting State agrees to take all measures which it judges desirable—

(*a*) In order to make easily accessible to all interested parties the lists communicated to it according to Article I.

(*b*) In order to secure favorable consideration of all the proposals of exchange which might be addressed to it by all the contracting States with regard to scientific or literary publications included in the above-mentioned lists.

ART. III. To facilitate generally the exchange of works which are the most important or most representative of the various types of national culture, the high contracting parties shall collect or catalogue the publications received by gift or otherwise which are available for international exchange. They will publish from time to time a list of these works.

This list will also give the names of works existing in duplicate in libraries, which may be exchanged.

ART. IV. The high contracting parties undertake to encourage in every way the multiplication of exchanges of scientific and literary publications, whether State-subsidized or not, between academies and learned societies, universities, and scientific institutions, as laid down in Article VII of the Convention of 1886.

ART. V. The high contracting parties undertake to publish annual reports on the work of their exchange services. These reports shall be transmitted to the committee on intellectual cooperation, which shall publish extracts therefrom, together with a general report on the work of the international exchanges during the period in question.

The text of the above draft convention was brought to the attention of this Government by the secretary general of the League of Nations with the request that consideration be given to the feasi-

bility of agreeing to it. The State Department referred the matter to the Institution, which replied in part as follows:

> While it is realized that the articles in the proposed new convention would greatly facilitate the dissemination and interchange of published information among the various countries, it is also realized that it would be impossible to carry out their stipulations even partially without the expenditure of a considerable sum of money annually. So far as the Smithsonian Institution is concerned, it would be impossible to do so without a large increase in the appropriation made to it for the support of the International Exchange Service.
>
> The Smithsonian Institution is, therefore, not in a position to carry out even partially the terms proposed in the new convention unless adequate additional funds were appropriated for the purpose. The Institution has, however, always done everything in its power to promote this subject since it inaugurated a system of international exchange in 1850, and believes that it might be well for this country to consider again at a later and more favorable time the question of adhering to the proposed convention.

The committee of experts also gave consideration to various other matters looking to the improvement of the international exchange service at large and the extension of its activities.

Respectfully submitted.

C. G. ABBOT,
Assistant Secretary, in charge of Library and Exchanges.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 6

REPORT ON THE NATIONAL ZOOLOGICAL PARK

SIR: I have the honor to submit the following report on the operations of the National Zoological Park for the fiscal year ending June 30, 1925.

Mr. N. Hollister, superintendent of the park since 1916, died on November 3, 1924, and was succeeded by Dr. Alexander Wetmore, who served until April 1, 1925. On that date Doctor Wetmore was appointed an assistant secretary of the Smithsonian Institution, and the writer was honored by appointment as superintendent of the park on May 13, 1925.

The appropriation made by Congress for the regular maintenance of the park was $148,237. From the printing and binding appropriation of the Smithsonian Institution, $300 was allotted to the National Zoological Park. A special appropriation of $3,250 was made by Congress for laying a water main and installing two fire hydrants in the park. This sum proved to be inadequate, and it was necessary to allot money from the regular maintenance fund of the park to complete the work.

As regards the collection, the year has not been a satisfactory one. Many of the specimens in the park representing major types of animals are very old and occasional deaths are beginning to thin their ranks, as has been expected, which has resulted during the past year in the loss of valuable specimens in several representative groups, thus greatly diminishing the value of the collection.

ACCESSIONS

Gifts.—One hundred and thirty animals were presented to the park or placed there on indefinite deposit during the year. Notable among these are the splendid young male chimpanzee and a pair of turacous placed on deposit by Mr. Victor J. Evans, who maintains a continual interest in the collection; a series of five valuable monkeys presented by Mr. and Mrs. E. R. Grant, of Washington, D. C.; a Bateleur eagle, an Abyssinian falcon, and two South American stone plover, by Mr. B. H. Swales; a brocket deer by Mr. P. W. Shufeldt, of Belize, British Honduras; a black bear by Mr. Fred N. Bent, of De Leon Springs, Fla.; and a large monitor lizard by Capt. Walter K. Bur-

gess, United States Army. A complete list of gifts for the year from 70 individual donors, is as follows:

Mr. E. R. Acher, Washington, D. C., Virginia opossum.

Mr. J. M. Annadale, Washington, D. C., Virginia opossum.

Mr. C. R. Aschemeier, Washington, D. C., chicken turtle, 2 gopher tortoises and Florida snapping turtle.

Mr. M. K. Brady, Washington, D. C., Chinese, Japanese, and American tortoises and terrapins.

Mr. Vernon Bailey, Biological Survey, Washington, D. C., white-headed beach mouse and 5 grasshopper mice.

Dr. Barnhart, Washington, D. C., mockingbird.

Mr. O. E. Baynard, Plant City, Fla., Florida barred owl and bald eagle.

Mr. J. T. Benson, Nashua, N. H., Nepalese paroquet.

Mrs. L. A. Bostwick, Washington, D. C., 2 Tovi paroquets.

Capt. Walter K. Burgess, United States Army, monitor lizard.

Mr. Fred N. Burt, De Leon Springs, Fla., black bear.

Miss Helen Carlisle, Washington, D. C., brown capuchin.

Mr. H. C. Chandlee, Washington, D. C., Cuban parrot.

President Coolidge, White House, alligator.

Mrs. S. E. De Maret, Washington, D. C., canary and red, yellow, and blue macaw.

Mrs. H. O. Earle, Washington, D. C., alligator.

Mr. E. H. Ehlis, Washington, D. C., screech owl.

Mr. Will Ellis, Niagara Falls, Ontario, banded rattlesnake.

Mr. V. J. Evans, chimpanzee, 2 turacous, and 2 chukker partridges.

Mr. Charles L. Fagan, Rahway, N. J., Hungarian quail, bobolink, and Gay's finch.

Mr. Robert W. Ferguson, Boston, Mass., wild turkey.

Mrs. Robert W. Ferguson, Fernandina, Fla., 3 rattlesnakes.

Mr. E. K. Fox, Washington, D. C., black-crowned night heron.

Mr. A. G. P. Garrett, jr., Washington, D. C., raccoon.

Mrs. E. H. Gilford, Washington, D. C., Philippine macaque.

Dr. W. S. Gochenour, Bureau of Animal Industry, Department of Agriculture, Washington, D. C., 5 mallards.

Mr. E. R. Grant, Washington, D. C., mandrill, Gelada baboon, yellow baboon, and sphinx baboon.

Mrs. E. R. Grant, Washington, D. C., lesser white-nosed guenon.

Mr. Arthur Harris, Washington, D. C., ring-necked pheasant.

Mr. Thomas Harrison, Washington, D. C., alligator.

Miss Ina L. Hawes, Bureau of Entomology, Washington, D. C., horned toad.

Mr. Joseph Hayden, Washington, D. C., grass paroquet.

Mr. Owen Hockman, Washington, D. C., barred owl.

Mr. E. H. Holbrook, Maupin, Oreg., black bear.

Mrs. M. J. Holmes, Washington, D. C., blue jay.

Mr. W. F. Hopkins, Washington, D. C., painted turtle.

Mr. I. S. Horne, Kansas City, Mo., 12 prairie dogs.

Mr. Clyde Howard, Huntley, Mont., coyote.

Mr. Francis Jaffee, Washington, D. C., St. Helena waxbill.

Mr. F. N. Jarvis, Biological Survey, Washington, D. C., American barn owl and Cooper's hawk.

Mr. E. J. Jutz, Washington, D. C., Margay cat.

Miss Virginia Kalmbach, Washington, D. C., canary.

Mr. Francis S. Key, Washington, D. C., alligator.

Mr. Jerome Keyes, Alexandria, Va., spreading adder.
Mr. John M. Klein, Washington, D. C., blue-fronted parrot.
Maj. Frank G. Long, United States Army, red, yellow, and blue macaw.
Mr. Herbert Manning, Washington, D. C., alligator.
Miss Merla G. Matthews, Washington, D. C., alligator.
Mrs. J. W. McClure, Sebring, Fla., two sandhill cranes.
Miss Leila M. Milstead, Newington, Va., Virginia opossum.
Mrs. J. W. Morse, Washington, D. C., alligator.
Dr. William M. Mann, African tortoises, Reeves turtle, and blue-headed parrot.
Mrs. D. W. Padden, Fredonia, N. Y., double yellow-head parrot.
Dr. Pardoe, Bound Brook, N. J., pine snake.
Mrs. S. F. Perkins, Washington, D. C., two snapping turtles and two painted turtles.
Mr. E. L. Phillips, Washington, D. C., alligator.
Mr. J. H. Pilling, Falls Church, Va., brown capuchin.
Mrs. R. H. Quinn, Washington, D. C., common rabbit.
Mr. E. D. Reid, United States National Museum, Washington, D. C., pilot black snake.
Mr. H. W. Richards, Takoma Park, Md., two screech owls.
Mr. J. T. Russell, Washington, D. C., Petz paroquet.
Mr. L. B. Robertson, Clarendon, Va., Bonnet monkey.
Mr. John B. Shepard, Albany, N. Y., muskrat.
Mr. R. C. Shannon, United States National Museum, Washington, D. C., copperhead snake.
Mr. P. W. Shufeldt, Belize, B. H., brocket.
Mr. Carl H. Smith, Washington, D. C., orange-winged paroquet.
Dr. T. E. Snyder, Bureau of Entomology, Washington, D. C., spreading adder.
Mr. B. H. Swales, Washington, D. C., South American stone plover; pigmy falcon, and Bateleur eagle.
Mr. J. E. Tyler, Washington, D. C., canary.
Mrs. R. C. Wilton, Washington, D. C., yellow and blue macaw.
Mr. H. A. Wrenn, Baltimore, Md., albino squirrel.

Births.—During the year 74 birds and mammals, hatched or born at the park, were added to the collection. Among the mammals were: Manchurian tiger, 3; plains wolf, 3; coyote, 5; European brown bear, 4; Rocky Mountain sheep, 3; mouflon, 1; tahr, 2; American bison, 3; yak, 1; Indian buffalo, 1; black buck, 1; American elk, 1; red deer, 4; Barasingha deer, 1; Japanese deer, 4; fallow deer, 3; hippopotamus, 1; grasshopper mouse, 5; rhesus monkey, 1; Javan macaque, 1; Japanese macaque, 1; flying phalanger, 1; great red kangaroo, 3; rufous-bellied wallaby, 1; brush-tailed rock wallaby, 1.

The park was again fortunate in raising two blue geese (*Chen cærulescens*). Other birds hatched were as follows: Mute swan, black duck, peafowl, silver gull, and black-crowned night heron.

Purchases, exchanges, and transfers.—Only 91 specimens were purchased during the year. Of these special mention should be made of a De Brazza's guenon, a serval, a pair of viscachas, an Arabian gazelle, a llama, and a male gemsbok. The last named is a magnificent specimen, the second of its kind to be received at the park.

A small number of animals were received in exchange for surplus stock from the collection.

The Biological Survey, United States Department of Agriculture, transferred a number of animals taken by field agents of the bureau, including some large western ravens, western porcupines, two sandhill cranes, and two whistling swans.

Deposits.—Among the animals received on deposit, which represented species not exhibited in the collection, were a sarus crane, a jabiru stork, and a pair of adjutants, deposited for a time by Mr. Victor J. Evans. Of species placed on deposit which were new to the park records, a lesser white-nosed guenon is especially notable.

REMOVALS

Forty-one birds and mammals were sent away in exchange to other zoological gardens during the year. Among these were two elk, an Indian buffalo, two American bison, six red deer, four Japanese deer, and a llama.

Nine animals and birds on deposit were returned to their owners.

The average mortality among the animals remains low, despite numerous losses during the year, chiefly among aged animals, long on exhibition. These losses, however, have been very serious, as they include a bull eland that had lived in the park since 1916, a Grant zebra received in 1909, a Rocky Mountain sheep ram received in 1917, Barbados sheep, a reindeer, a wart hog, two lions, a male Axis deer, an African leopard that had lived in the park since 1909, and an African rhinoceros that had been in the collection only 18 months. Most of these animals were the only representatives of their species in the collection, and their loss creates gaps that can be filled only by purchases involving expenditures of far more money than is available.

Losses among reptiles are so heavy unless adequate arrangements are made for their care, that it is useless to attempt to maintain a collection in this group, except of a few hardy types, until proper quarters are provided for them.

Post-mortem examinations of animals that died were made, when desired, by the pathological division of the Bureau of Animal Industry.

The following list shows the results of autopsies, the causes being arranged by groups:

MAMMALS

Marsupialia: Pneumonia, 3; pleurisy and pericarditis, 1; gastroenteritis, 1; necrobacillosis, 3; no cause found, 1.

Carnivora: Chronic nephritis, 1; internal hemorrhage, 1; cystic goitre, 1; no cause found, 1.

Rodentia: Pneumonia, 1; necrosis of jaw, 1; no cause found, 1.

Edentata: Congestion of lungs, 1; no cause found, 1.

Primates: Congestion of lungs, 1; icterus, 1; metritis, 1; cystic tumor, 1; ankylosis, 1; cage paralysis, 1.

Artiodactyla: Pneumonia, 3; enteritis, 2; gastroenteritis, 1; acute indigestion, 1; impaction of rumen, 2; old age, 6; accident, 1; difficult parturition, 1.

Perissodactyla: Round worm infestation, 1; volvulus of large intestine, 1.

Proboscidea: Malignant tumor, 1.

Insectivora: Gastroenteritis, 1.

BIRDS

Ciconiiformes: Impaction of crop, 1; accident, 1; no cause found, 2.

Anseriformes: Tuberculosis, 2; gastroenteritis, 1; visceral gout, 1; verminous obstipation, 1; no cause found, 5.

Falconiformes: Accident, 1.

Galliformes: Accident, 1.

Gruiformes: Accident, 1.

Charadriiformes: Enteritis, 1; visceral gout, 1.

Psittaciformes: Tuberculosis, 2; coccidiosis, 1.

Coraciiformes: Tuberculosis, 1; volvulus of large intestine, 1.

Passeriformes: Syncope, 1; tapeworm infestation, 1; no cause found, 1.

ANIMALS IN THE COLLECTION, JUNE 30, 1925

MAMMALS

MARSUPIALIA

Allen's opossum (*Metachirops opossum fuscogriseus*)	1
Virginia opossum (*Didelphis virginia*)	10
Tasmanian devil (*Sarcophilus harrisii*)	2
Australian opossum (*Trichosurus vulpecula*)	1
Flying phalanger (*Petaurus breviceps*)	7
Brush-tailed rock wallaby (*Petrogale penicillata*)	3
Rufous-bellied wallaby (*Macropus billardieri*)	3
Wallaroo (*Macropus robustus*)	1
Great gray kangaroo (*Macropus giganteus*)	2
Red kangaroo (*Macropus rufus*)	6
Wombat (*Phascolomys mitchelli*)	1

CARNIVORA

Kadiak bear (*Ursus middendorffi*)	2
Alaska Peninsula bear (*Ursus gyas*)	4
Yakutat bear (*Ursus dalli*)	1
Kidder's bear (*Ursus kidderi*)	2
European bear (*Ursus arctos*)	6
Grizzly bear (*Ursus horribilis*)	1
Apache grizzly (*Ursus apache*)	1
Himalayan bear (*Ursus thibetanus*)	1
Black bear (*Ursus americanus*)	4
Cinnamon bear (*Ursus americanus cinnamomum*)	2
Glacier bear (*Ursus emmonsii*)	1
Sloth bear (*Melursus ursinus*)	1
Sun bear (*Helarctos malayanus*)	1
Polar bear (*Thalarctos maritimus*)	2
Dingo (*Canis dingo*)	3
Gray wolf (*Canis nubilus*)	7
Timber wolf (*Canis occidentalis*)	1
Florida wolf (*Canis floridanus*)	1
Texas red wolf (*Canis rufus*)	1
Coyote (*Canis latrans*)	7
Hybrid coyote (*Canis latrans-rufus*)	1
California coyote (*Canis ochropus*)	1
Black-backed jackal (*Canis mesomelas*)	1
Red fox (*Vulpes fulva*)	4
European fox (*Vulpes vulpes*)	1
Kit fox (*Vulpes velox*)	2
Gray fox (*Urocyon cinereoargenteus*)	2
Bush dog (*Icticyon venaticus*)	1
Cacomistle (*Bassariscus astutus*)	2
Panda (*Ailurus fulgens*)	1
Raccoon (*Procyon lotor*)	7
Florida racoon (*Procyon lotor elucus*)	2
Gray coatimundi (*Nasua narica*)	2
Kinkajou (*Potos flavus*)	3
Mexican kinkajou (*Potos flavus astecus*)	1
American badger (*Taxidea taxus*)	2
Florida otter (*Lutra canadensis vaga*)	3
Black-footed ferret (*Mustela nigripes*)	1
Palm civet (*Paradoxurus hermaphroditus*)	2

Aard-wolf (*Proteles cristatus*)	1
Spotted hyena (*Crocuta crocuta*)	1
Striped hyena (*Hyæna hyæna*)	1
African cheetah (*Acinonyx jubatus*)	2
Lion (*Felis leo*)	5
Bengal tiger (*Felis tigris*)	1
Manchurian tiger (*Felis tigris longipilis*)	5
Leopard (*Felis pardus*)	1
Jaguar (*Felis onca*)	1
Serval (*Felis serval*)	1
Brazilian ocelot (*Felis pardalis brasiliensis*)	1
Snow leopard (*Felis uncia*)	1
Mexican puma (*Felis azteca*)	4
Mountain lion (*Felis hippolestes*)	1
Canada lynx (*Lynx canadensis*)	1
Northern wild cat (*Lynx uinta*)	1
Bay lynx (*Lynx rufus*)	2
Clouded leopard (*Neofelis nebulosa*)	1

PINNIPEDIA

California sea lion (*Zalophus californianus*)	2
San Geronimo harbor seal (*Phoca richardii geronimensis*)	1

RODENTIA

Woodchuck (*Marmota monax*)	8
Prairie dog (*Cynomys ludovicianus*)	36
European squirrel (*Sciurus vulgaris*)	4
Prevost's squirrel (*Sciurus prevosti*)	1
Honduras squirrel (*sciurus boothiæ*)	1
Albino squirrel (*Sciurus carolinensis*)	8
Bailey's pocket mouse (*Perognathus baileyi*)	1
White-headed beach mouse (*Peromyscus leucocephalus*)	1
American beaver (*Castor canadensis*)	5
Grasshopper mouse (*Onychomys leucogaster*)	10
African porcupine (*Hystrix africæaustralis*)	1
Malay porcupine (*Acanthion brachyurum*)	2
Tree porcupine (*Coendou prehensilis*)	1
Western porcupine (*Erethizon epixanthum*)	1
Viscacha (*Lagostomus trichodactylus*)	2
Central American paca (*Cuniculus paca virgatus*)	3
Sooty agouti (*Dasyprocta fuliginosa*)	1
Speckled agouti (*Dasyprocta punctata*)	2
Azara's agouti (*Dasyprocta azaræ*)	1
Trinidad agouti (*Dasyprocta rubrata*)	5
Yellow-rumped agouti (*Dasyprocta lucifer cayennæ*)	1
Guinea pig (*Cavia porcellus*)	10
Capybara (*Hydrochærus hydrochæris*)	2

LAGOMORPHA

Domestic rabbit (*Oryctolagus cuniculus*)	10

INSECTIVORA

European hedgehog (*Erinaceus europæus*)	5

PRIMATES

Ring-tailed lemur (*Lemur catta*)	1
Red-fronted lemur (*Lemur rufifrons*)	1
Gray spider monkey (*Ateles geoffroyi*)	2
Mexican spider monkey (*Ateles vellerosus*)	1
White-throated capuchin (*Cebus capucinus*)	4
Weeping capuchin (*Cebus apella*)	1
Brown capuchin (*Cebus fatuellus*)	3
Gelada baboon (*Theropithecus obscurus*)	1
Chacma (*Papio porcarius*)	1
Anubis baboon (*Papio cynocephalus*)	1
East African baboon (*Papio ibeanus*)	1
Arabian baboon (*Papio hamadryas*)	2
Mandrill (*Papio sphinx*)	2
Drill (*Papio leucophæus*)	1
Moor macaque (*Cynopithecus maurus*)	2
Barbary ape (*Simia sylvanus*)	2
Japanese macaque (*Macaca fuscata*)	3
Pig-tailed monkey (*Macaca nemestrina*)	1
Burmese macaque (*Macaca andamanensis*)	1
Rhesus monkey (*Macaca rhesus*)	18
Bonnet monkey (*Macaca sinica*)	1
Philippine macaque (*Macaca syrichta*)	1
Javan macaque (*Macaca mordax*)	6
Black mangabey (*Cercocebus aterrimus*)	1
Sooty mangabey (*Cercocebus fuliginosus*)	2
Hagenbeck's mangabey (*Cercocebus hagenbecki*)	1
White-collared mangabey (*Cercocebus torquatus*)	1
Green guenon (*Lasiopyga callitrichus*)	2
Vervet guenon (*Lasiopyga pygerythra*)	1
Mona guenon (*Lasiopyga mona*)	3
De Brazza's guenon (*Lasiopyga brazzæ*)	1
Lesser white-nosed guenon (*Lasiopyga petaurista*)	1
Chimpanzee (*Pan satyrus*)	2

ARTIODACTYLA

Wild boar (*Sus scrofa*)	1
Collared peccary (*Pecari angulatus*)	2
Hippopotamus (*Hippopotamus amphibius*)	3
Bactrian camel (*Camelus bactrianus*)	2
Arabian camel (*Camelus dromedarius*)	1
Guanaco (*Lama guanicoe*)	3
Llama (*Lama glama*)	6
Reindeer (*Rangifer tarandus*)	5
Fallow deer (*Dama dama*)	9
Axis deer (*Axis axis*)	2
Hog deer (*Hyelaphus porcinus*)	3
Sambar (*Rusa unicolor*)	2
Barasingha (*Rucervus duvaucelli*)	6
Burmese deer (*Rucervus eldii*)	1
Japanese deer (*Sika nippon*)	12
Red deer (*Cervus elaphus*)	13
Kashmir deer (*Cervus hanglu*)	2
Bedford deer (*Cervus xanthopygus*)	5
American elk (*Cervus canadensis*)	4

docoileus virginianus)	1
a sartorii)	1
icus albifrons)	2
(Connochætes gnou)	1
onnochætes taurinus)	1
jus leche)	1
Egocerus niger)	1
(Antilope cervicapra)	4
(Gazella arabica)	1
ius tragocamelus)	2
gazella)	1
nd *(Taurotragus oryx*	1
(Oreamnos america-	5
us jemlahicus)	8
ra ibex)	2
s)	1
ragus lervia)	1
sheep *(Ovis canaden-*	7
n sheep *(Ovis canaden-*	1
Moufion *(Ovis musimon)*	4
Greenland musk-ox *(Ovibos moschatus wardi)*	2
Zebu *(Bos indicus)*	1
Yak *(Poëphagus grunniens)*	5
American bison *(Bison bison)*	15
Indian buffalo *(Bubalus bubalis)*	3

PERISSODACTYLA

Malay tapir *(Tapirus indicus)*	1
Brazilian tapir *(Tapirus terrestris)*	1
Baird's tapir *(Tapirella bairdii)*	1
Grevy's zebra *(Equus grevyi)*	1
Zebra-horse hybrid *(Equus grevyi-caballus)*	1
Zebra-ass hybrid *(Equus grevyi-asinus)*	1

PROBOSCIDEA

Abyssinian elephant *(Loxodonta africana oxyotis)*	1
Sumatran elephant *(Elephas sumatranus)*	1

BIRDS

RATITÆ

strich *(Struthio aus-*	5
ch *(Struthio molybdo-*	2
(Struthio camelus)	1
ricana)	1
ary *(Casuarius phi-*	1
s novæhollandiæ)	2
nantelli)	1

CONIIFORMES

pelican *(Pelecanus*	7
pelican *(Pelecanus*	2
(Pelecanus roseus)	2
an *(Pelecanus con-*	2
(Pelecanus occiden-	9
pelican *(Pelecanus*	5
ant *(Phalacrocorax*	3
ron *(Ardea occiden-*	2
(Ardea herodias)	1
ardea goliath)	1
Casmerodius egretta)	2
ight heron *(Nycticorax*	32
onia ciconia)	1
onia nigra)	1
(Leptoptilus crumeni-	2
Xenorhynchus asiati-	1
Wood ibis *(Mycteria americana)*	4
Straw-necked ibis *(Carphibis spinicollis)*	1
Sacred ibis *(Threskiornis æthiopicus)*	2
Black-headed ibis *(Threskiornis melanocephalus)*	3
Australian ibis *(Threskiornis strictipennis)*	4
White ibis *(Guara alba)*	10
Scarlet ibis *(Guara rubra)*	4
European flamingo *(Phœnicopterus roseus)*	4

ANSERIFORMES

Mallard *(Anas platyrhynchos)*	9
Black duck *(Anas rubripes)*	8
Australian black duck *(Anas superciliosa)*	1
Gadwall *(Chaulelasmus streperus)*	1
Falcated duck *(Eunetta falcata)*	1
European widgeon *(Mareca penelope)*	3
Baldpate *(Mareca americana)*	8
Green-winged teal *(Nettion carolinense)*	11
European teal *(Nettion crecca)*	4
Baikal teal *(Nettion formosum)*	6
Blue-winged teal *(Querquedula discors)*	1
Garganey *(Querquedula querquedula)*	6
Shoveller *(Spatula clypeata)*	4
Pintail *(Dafila acuta)*	16
Bahaman pintail *(Poecilonetta bahamensis)*	1
Wood duck *(Aix sponsa)*	10
Mandarin duck *(Dendronessa galericulata)*	12
Canvasback *(Marila valisineria)*	9

European pochard (*Marila ferina*) 3
Redhead (*Marila americana*) 11
Ring-necked duck (*Marila collaris*) 2
Tufted duck (*Marila fuligula*) 1
Lesser scaup duck (*Marila affinis*) 3
Greater scaup duck (*Marila marila*) 9
Rosy-billed pochard (*Metopiana peposaca*) 4
Egyptian goose (*Chenalopex ægyptiacus*) 3
Upland goose (*Chloephaga leucoptera*) 1
Hawaiian goose (*Nesochen sandvicensis*) 2
Snow goose (*Chen hyperboreus*) 1
Greater snow goose (*Chen hyperboreus nivalis*) 2
Blue goose (*Chen cærulescens*) 5
White-fronted goose (*Anser albifrons*) 2
American white-fronted goose (*Anser albifrons gambeli*) 3
Bean goose (*Anser fabalis*) 2
Pink-footed goose (*Anser brachyrhynchus*) 2
Bar-headed goose (*Eulabia indica*) 2
Canada goose (*Branta canadensis*) 8
Hutchins's goose (*Branta canadensis hutchinsi*) 6
White-cheeked goose (*Branta canadensis occidentalis*) 12
Cackling goose (*Branta canadensis minima*) 2
Brant (*Branta bernicla glaucogastra*) 8
Barnacle goose (*Branta leucopsis*) 5
Spur-winged goose (*Plectropterus gambensis*) 1
Muscovy duck (*Cairina moschata*) 1
Pied goose (*Anseranas semipalmata*) 2
Black-bellied tree duck (*Dendrocygna autumnalis*) 5
Eyton's tree duck (*Dendrocygna eytoni*) 4
Mute swan (*Cygnus gibbus*) 4
Trumpeter swan (*Olor buccinator*) 1
Black swan (*Chenopis atrata*) 2

FALCONIFORMES

California condor (*Gymnogyps californianus*) 3
Turkey vulture (*Cathartes aura*) 3
Black vulture (*Coragyps urubu*) 1
King vulture (*Sarcoramphus papa*) 2
Secretary bird (*Sagittarius serpentarius*) 1
Griffon vulture (*Gyps fulvus*) 1
African black vulture (*Torgos tracheliotus*) 1
Cinereous vulture (*Ægypius monachus*) 2
Caracara (*Polyborus cheriway*) 4
Wedge-tailed eagle (*Uroaëtus audax*) 2
Golden eagle (*Aquila chrysaëtos*) 5
White-bellied sea eagle (*Cuncuma leucogaster*) 2
Bald eagle (*Haliæetus leucocephalus*) 10
Alaskan bald eagle (*Haliæetus leucocephalus alascanus*) 2
Bateleur eagle (*Helotarsus ecaudatus*) 1
Broad-winged hawk (*Buteo platypterus*) 1
Red-tailed hawk (*Buteo borealis*) 7
Pigmy falcon (*Polihierax semitorquatus*) 1
Sparrow hawk (*Falco sparverius*) 4

GALLIFORMES

Razor-billed curassow (*Mitu mitu*) 4
Penelope (*Penelope boliviana*) 1
Wild turkey (*Meleagris gallopavo silvestris*) 1
Vulturine guinea fowl (*Acryllium vulturinum*) 2
Peafowl (*Pavo cristatus*) 18
Peacock pheasant (*Polyplectron bicalcaratum*) 1
Silver pheasant (*Gennæus nycthemerus*) 2
Lady Amherst's pheasant (*Chrysolophus amherstiæ*) 1
Ring-necked pheasant (*Phasianus torquatus*) 10
European quail (*Coturnix coturnix*) 3
Hungarian quail (*Perdix perdix*) 1
Gambel's quail (*Lophortyx gambelli*) 1
Valley quail (*Lophortyx californica vallicola*) 1
Chukar partridge (*Caccabis chukar*) 2
Scaled quail (*Callipepla squamata*) 5
Massena quail (*Cyrtonyx montezumæ*) 1

GRUIFORMES

East Indian gallinule (*Porphyrio calvus*) 2
Pukeko (*Porphyrio stanleyi*) 1
Black-tailed moor hen (*Microtribonyx ventralis*) 2
American coot (*Fulica americana*) 1
South Island weka rail (*Ocydromus australis*) 3
Short-winged weka (*Ocydromus brachypterus*) 2
Sandhill crane (*Grus mexicana*) 3
Little brown crane (*Grus canadensis*) 4
Sarus crane (*Grus collaris*) 1
White-necked crane (*Grus leucauchen*) 1
Indian white crane (*Grus leucogeranus*) 1
Lilford's crane (*Grus lilfordi*) 2
Australian crane (*Grus rubicunda*) 2
Demoiselle crane (*Anthropoides virgo*) 6
Crowned crane (*Balearica pavonina*) 1
Kagu (*Rhynochetos jubatus*) 2

CHARADRIIFORMES

Ruff (*Philomachus pugnax*) 4
Lapwing (*Vanellus vanellus*) 1
Yellow-wattled lapwing (*Lobivanellus indicus*) 1
South American stone plover (*Œdicnemus bistriatus vocifer*) 2

gull (*Gabianus pacificus*) ____ 1
lack-backed gull (*Larus ma-* ____ 4
gull (*Larus argentatus*) ____ 3
ll (*Larus novæhollandiæ*) ____ 21
g gull (*Larus atricilla*) ____ 2
pigeon (*Goura coronata*) ____ 3
crowned pigeon (*Goura vic-* ____ 1
an crested pigeon (*Ocyphaps es*) ____ 3
ring pigeon (*Phaps chalcop-* ____ 2
an dove (*Gallicolumba rube-* ____ 7
-heart dove (*Gallicolumba va*) ____ 2
geon (*Columba palumbus*) ____ 7
g dove (*Zenaidura macroura*) ____ 1
onted dove (*Leptotila fulvi- brachyptera*) ____ 4
quail-dove (*Oreopeleia mon-* ____ 1
d dove (*Spilopelia tigrina*) ____ 4
ve (*Geopelia striata*) ____ 3
ldered dove (*Geopelia hume-* ____ 1
e (*Scardafella inca*) ____ 1
round dove (*Chæmepelia passaflavida*) ____ 1
nged dove (*Chalcophaps in-* ____ 1
turtledove (*Streptopelia ri-* ____ 3
eon (*Lamprotreron superba*) ____ 1

PSITTACIFORMES

itor notabilis) ____ 3
lkeet (*Glossopsitta concinna*) 1
(*Calopsitta novæhollandiæ*) ____ 2
cockatoo (*Kakatoe roseica-* ____ 15
cockatoo (*Kakatoe gym-* ____ 1
er's cockatoo (*Kakatoe lead-*) ____ 2
e cockatoo (*Kakatoe hæmatia*) ____ 1
ckatoo (*Kakatoe alba*) ____ 1
rested cockatoo (*Kakatoe gal-* ____ 9
d-crested cockatoo (*Kakatoe ensis*) ____ 1
nacaw (*Ara auricollis*) ____ 1
green macaw (*Ara mexicana*) ____ 2
acaw (*Ara severa*) ____ 1
yellow macaw (*Ara ararau-* ____ 7
lue-and-yellow macaw (*Ara* ____ 7
acaw (*Diopsittaca hahni*) ____ 1
d paroquet (*Aratinga leutilmus*) ____ 1
roquet (*Eupsittula canicu-* ____ 6
owned paroquet (*Eupsittula* ____ 3
Weddell's paroquet (*Eupsittula weddelli*) ____ 8
Blue-winged parrotlet (*Psittacula passerina*) ____ 14
Golden paroquet (*Brotogeris chrysosema*) ____ 2
Tovi paroquet (*Brotogeris jugularis*) ____ 7
Orange-winged paroquet (*Brotogeris chiriri*) ____ 8
Yellow-naped parrot (*Amazona auropalliata*) ____ 8
Mealy parrot (*Amazona farinosa*) ____ 2
Orange-winged parrot (*Amazona amazonica*) ____ 5
Blue-fronted parrot (*Amazona æstiva*) ____ 2
Red-crowned parrot (*Amazona viridigenalis*) ____ 8
Double yellow-headed parrot (*Amazona oratrix*) ____ 9
Yellow-headed parrot (*Amazona ochrocephala*) ____ 4
Festive parrot (*Amazona festiva*) ____ 3
Lesser white-fronted parrot (*Amazona albifrons nana*) ____ 1
Santo Domingo parrot (*Amazona ventralis*) ____ 3
Cuban parrot (*Amazona leucocephala*) 8
Maximilian's parrot (*Pionus maximiliani*) ____ 1
Dusky parrot (*Pionus fuscus*) ____ 2
Blue-headed parrot (*Pionus menstruus*) 2
Amazonian caique (*Pionites xanthomeria*) ____ 5
Lesser vasa parrot (*Coracopsis nigra*) ____ 1
Greater vasa parrot (*Coracopsis vasa*) ____ 1
Red-faced love bird (*Agapornis pullaria*) ____ 8
Pennant's paroquet (*Platycercus elegans*) ____ 2
Rosella paroquet (*Platycercus eximius*) 1
Black-tailed paroquet (*Polytelis melanura*) ____ 1
King paroquet (*Aprosmictus cyanopygius*) ____ 1
Crimson-winged paroquet (*Aprosmictus erythropterus*) ____ 1
Ring-necked paroquet (*Conurus torquatus*) ____ 1
Nepalese paroquet (*Conurus nepalensis*) ____ 1
Philippine green parrot (*Tanygnathus lucionensis*) ____ 1
Grass paroquet (*Melopsittacus undulatus*) ____ 16

CUCULIFORMES

Turaco, immature (*Turacus sp.*) ____ 2

CORACIIFORMES

Giant kingfisher (*Dacelo gigas*) ____ 1
Yellow-billed hornbill (*Lophoceros leucomelas*) ____ 1
Morepork owl (*Spiloglaux novæseelandiæ*) ____ 1
Barred owl (*Strix varia*) ____ 6
Florida barred owl (*Strix varia allent*) 1
Snowy owl (*Nyctea nyctea*) ____ 1

Screech owl (*Otus asio*)	4
Great horned owl (*Bubo virginianus*)	7
Eagle owl (*Bubo bubo*)	1
American barn owl (*Tyto perlata pratincola*)	5

PASSERIFORMES

Cock-of-the-rock (*Rupicola rupicola*)	1
Silver-eared hill-tit (*Mesia argentauris*)	1
Red-billed hill-tit (*Liothrix luteus*)	11
Black-gorgeted laughing-thrush (*Garrulax pectoralis*)	2
White-eared bulbul (*Otocompsa leucotis*)	3
Red-eared bulbul (*Otocompsa jocosa*)	2
European blackbird (*Turdus merula*)	1
Mockingbird (*Mimus polyglottos*)	1
Piping crow-shrike (*Gymnorhina tibicen*)	2
European raven (*Corvus corax*)	1
American raven (*Corvus corax sinuatus*)	3
Australian crow (*Corvus coronoides*)	1
American crow (*Corvus brachyrhynchos*)	2
Yucatan jay (*Cissilopha yucatanica*)	1
Blue jay (*Cyanocitta cristata*)	2
Green jay (*Xanthoura luxuosa*)	3
Yellow-headed marsh bird (*Agelaius icterocephalus*)	1
Australian gray jumper (*Struthidea cinerea*)	1
Starling (*Sturnus vulgaris*)	9
Shining starling (*Lamprocorax metallicus*)	2
Laysan finch (*Telespyza cantans*)	2
Blue honey creeper (*Cyanerpes cyaneus*)	1
Blue-winged tanager (*Tanagra cyanoptera*)	1
Blue tanager (*Thraupis cana*)	1
Giant whydah (*Diatropura progne*)	3
Paradise whydah (*Steganura paradisea*)	2
Shaft-tailed whydah (*Tetrænura regia*)	1
Napoleon weaver (*Pyromelana afra*)	1
Red-billed weaver (*Quelea quelea*)	1
Bobolink (*Dolichonyx oryzivorus*)	1
Madagascar weaver (*Foudia madagascariensis*)	1
St. Helena waxbill (*Estrilda astrilda*)	4
Rosy-rumped waxbill (*Estrilda rhodopygia*)	1
Nutmeg finch (*Munia punctulata*)	3
White-headed nun (*Munia maja*)	2
Black-headed nun (*Munia atricapilla*)	5
Chestnut-breasted finch (*Munia castaneithorax*)	3
Java finch (*Munia oryzivora*)	13
Masked grassfinch (*Poëphila personata*)	5
Black-faced Gouldian finch (*Poëphila gouldiæ*)	1
Red-faced Gouldian finch (*Poëphila mirabilis*)	1
Diamond finch (*Steganopleura guttata*)	5
Zebra finch (*Tæniopygia castanotis*)	15
Cutthroat finch (*Amadina fasciata*)	9
Red-headed finch (*Amadina erythrocephala*)	2
Hooded oriole (*Icterus cucullatus*)	2
Yellow-tailed oriole (*Icterus mesomelas*)	1
Purple grackle (*Quiscalus quiscula*)	2
Greenfinch (*Chloris chloris*)	3
European goldfinch (*Carduelis carduelis*)	4
Bramble finch (*Fringilla montifringilla*)	4
Yellowhammer (*Emberiza citrinella*)	1
House finch (*Carpodacus mexicanus frontalis*)	2
San Lucas house finch (*Carpodacus mexicanus ruberrimus*)	2
Canary (*Serinus canarius*)	19
Gray singing finch (*Serinus leucopygius*)	9

REPTILES

Alligator (*Alligator mississippiensis*)	43
Water dragon (*Physignathus lesueurii*)	1
Horned toad (*Phrynosoma cornutum*)	2
Glass snake (*Ophisaurus ventralis*)	1
Gila monster (*Heloderma suspectum*)	6
Gould's monitor (*Varanus gouldii*)	1
Philippine monitor (*Varanus salvator*)	1
Blue-tongued lizard (*Tiliqua scincoides*)	1
Rock python (*Python molurus*)	2
Regal python (*Python reticulatus*)	1
Anaconda (*Eunectes murinus*)	2
Boa constrictor (*Constrictor constrictor*)	1
Black snake (*Coluber constrictor*)	2
Blue racer (*Coluber constrictor flaviventris*)	6
Coachwhip snake (*Coluber flagellum*)	2
Chicken snake (*Elaphe quadrivittata*)	1
Corn snake (*Elaphe guttata*)	2
Pilot blacksnake (*Elaphe obsoleta*)	1
Pine snake (*Pituophis melanoleucus*)	4
Bull snake (*Pituophis sayi*)	4
Western bull snake (*Pituophis catenifer*)	1
Water snake (*Natrix sipedon*)	2
Western water snake (*Natrix sipedon fasciata*)	1
Garter snake (*Thamnophis sirtalis*)	1
Florida rattlesnake (*Crotalus adamanteus*)	3
Western diamond rattlesnake (*Crotalus atrox*)	4
Snapping turtle (*Chelydra serpentina*)	5
Florida snapping turtle (*Chelydra osceola*)	1
Rossignon's snapping turtle (*Chelydra rossignonii*)	1
Musk turtle (*Kinosternon odoratum*)	1
Mexican musk turtle (*Kinosternon sonoriense*)	1

South American musk turtle (*Kinosternon scorpioides*)	5
Pennsylvania musk turtle (*Kinosternon subrubrum*)	2
Wood turtle (*Clemmys insculpta*)	1
European pond turtle (*Emys orbicularis*)	5
South American terrapin (*Nicoria punctularia*)	1
Reeves turtle (*Geoclemmys reevesi*)	1
Painted turtle (*Chrysemys picta*)	3
Cooter (*Pseudemys scripta*)	2
Central American cooter (*Pseudemys ornata*)	2
Gopher tortoise (*Gopherus polyphemus*)	2
Duncan Island tortoise (*Testudo ephippium*)	1
Indefatigable Island tortoise (*Testudo porteri*)	1
Albemarle Island tortoise (*Testudo vicina*)	2
South American tortoise (*Testudo denticulata*)	2
African tortoise (*Testudo hermanni*)	1
Long-necked turtle (*Chelodina longicollis*)	1
Chicken turtle (*Deirochelys reticularia*)	1

Statement of the collection

	Mammals	Birds	Reptiles	Total
Presented	28	54	34	116
Born and hatched in National Zoological Park	54	20		74
Received in exchange	2	12		14
Purchased	60	26	5	91
Transferred from other Government departments	1	11	1	13
Deposited	15	13	6	34
	160	136	46	342

SUMMARY

Animals on hand July 1, 1924	1,645
Accessions during the year	342
Total animals handled	1,987
Deduct loss (by death, return of animals, and exchange)	367
	1,620

Status of collection

	Species	Individuals
Mammals	178	503
Birds	285	982
Reptiles	48	135
Total	511	1,620

Compared with the previous year, a decrease in number of individuals is shown and compared with 1923, when there were 1,768 animals in the collection, a still greater decrease is noted. This is due to continued losses in the aging stock, especially among the larger forms. The number of forms represented exceeds that of last year, an increase due to judicious selection and purchase of small species offered at moderate prices.

Additional funds are urgently needed for purchase of animals to fill the steadily increasing gaps in the groups of larger mammals.

VISITORS

The attendance record as determined by count and estimate exceeded that of the previous year by 75,385. The greatest attendance for one month was 372,950, in April. The increase is highly gratifying as it indicates the keen interest of the general public in the collections.

The attendance by months was as follows:

July	240,700
August	324,000
September	232,725
October	235,000
November	179,500
December	56,630
January	37,110
February	121,550
March	248,200
April	372,950
May	269,300
June	200,600
Total for year	2,518,265

Schools, classes, and similar organizations, recorded among the visitors, number 266, with a total of 20,890 individuals.

The highest attendance for a year recorded previously was 2,444,880 in 1924.

IMPROVEMENTS

The animal warehouse, 24 by 90 feet, with a small ell for a feed room, the construction of which had been begun during the previous year, was completed and put into service before the end of 1925. This building is very useful, both as quarters for animals temporarily not on exhibition, and as a reception house for animals just arriving where they may rest before being placed on exhibition. It will also be useful during the winter in storing birds which are exhibited during the summer in the big flight cage and elsewhere, and for which there is no room in the bird house.

A double bear cage of steel, each half 12 by 16 feet, with concrete shelter, has been erected to take the place of a large wooden cage that was decayed beyond safety or justifiable repair.

The log dam of loose bowlders across Rock Creek at the head of the American water-fowl pond to maintain a flow of water into the pond, which had been repeatedly washed out by floods, was replaced by a log dam faced with bowlders. The logs used were obtained from chestnut trees in the park that had died from bark disease.

A concrete chimney was built on the restaurant. This building still needs various improvements, especially the addition of a kitchen,

as well as an inclosed room where visitors may lunch comfortably in cold weather.

The bird house required repairs, as usual. Some of the cages were in such bad condition that they had to be entirely replaced. A new floor was laid in the feed room, and various minor repairs made. The roof leaked badly and will require treatment during the coming year.

The eland house, the zebra house, the fences about these, rubbish containers, outdoor benches, various inclosure fences, and other ironwork were painted during the year.

WATER MAIN

One thousand five hundred and eighty feet of six-inch water main was laid, and two fire hydrants installed, through a special appropriation of $3,250, supplemented by funds taken from the general appropriation.

NEEDS OF THE PARK

The needs of the park for exhibition buildings is even more acute than in previous years, as there has been tremendous growth in the number of visitors and there is need for better conditions for exhibition. The most important and customary buildings required by a zoological park are: Carnivore, pachyderm, primate, antelope, small mammal, bird, and reptile houses. Of permanent structures, the National Zoological Park has a primate house, a house to contain one elephant, and one end of a carnivore house. All other buildings are old, without exception originally built as temporary makeshifts and kept together only by continual and often expensive repairs.

The building that shelters most of the birds, built 28 years ago, was then intended to house the collections for three or four years, until a suitable bird house could be constructed. This structure is dark, with walls so decayed that they will no longer hold pebble-dash, and provides entirely inadequate space for either the collection of birds or the great numbers of visitors; it is not only unfit for its present use but actually unsafe for its inmates.

There is no house for reptiles, always popular with visitors, and none for small mammals. Such reptiles and small mammals as are shown at the park are scattered about in places where it is inconvenient to care for them, and where in some instances they actually close the passages needed for visitors.

During a period of 35 years a collection of animals has been assembled in the National Zoological Park which ranks among the most notable in this country. Adequate buildings to replace the

present obsolete quarters should be provided to house properly the living animals, to maintain them in health, and to exhibit them to the more than two million visitors who come annually to view them.

FUNDS FOR THE PURCHASE OF ANIMALS

The collection at the National Zoological Park is augmented each year by various gifts, and through unusual success in the breeding and rearing of animals, the park has been able to exchange specimens with other zoological parks so that it has maintained a reasonably well-balanced collection of the living animals of the world, always lacking, however, representatives of certain important and interesting species. For instance, there has never been a giraffe at the park. There is no rhinoceros, no pigmy hippopotamus, and no Indian elephant. Such animals as these, when offered to the park can not be considered owing to the entirely inadequate fund for the purchase of animals, and opportunities are frequently lost to fill definite gaps in the collection as well as to replace species lost through death, by the purchase of most desirable animals that are offered for sale.

An increased appropriation to cover cost and transportation of animals has been requested, but it seems advisable also to repeat the suggestion made in previous reports that an animal purchase fund be inaugurated and deposited with the Smithsonian Institution.

REVENUES OF THE PARK

A zoological park itself is not expected to finance the refreshment of visitors. There are in the National Zoological Park, however, as in other parks, a refreshment stand and a restaurant which are rented to private parties. The money from these concessions, under present regulations, goes to the United States Treasury and can not be used for the park, although repairs and other costs in connection with the restaurant must be borne by the park. It is earnestly recommended that the revenues from the restaurant concession, which serves only to benefit the public, be turned into the animal fund of the park instead of into the general fund of the Treasury. Such is the established practice in other parks, municipal and otherwise, which often derive considerable funds for the purchase of animals from such concessions.

Respectfully submitted.

W. M. MANN, *Superintendent.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 7

REPORT ON THE ASTROPHYSICAL OBSERVATORY

SIR: The Astrophysical Observatory was conducted under the following passage of the independent offices appropriation act approved June 7, 1924:

Astrophysical Observatory: For maintenance of the Astrophysical Observatory, under the direction of the Smithsonian Institution, including assistants, purchase of necessary books and periodicals, apparatus, making necessary observations in high altitudes, repairs and alterations of buildings, and miscellaneous expenses, $21,580.

The observatory occupies a number of frame structures within an inclosure of about 16,000 square feet south of the Smithsonian administration building at Washington, a cement observing station and frame cottage for observers on a plot of 10,000 square feet leased from the Carnegie Solar Observatory on Mount Wilson, Calif., and also a solar observing station on Mount Harqua Hala, Ariz., erected in 1920 at the expense of private funds contributed by Mr. John A. Roebling, of Bernardsville, N. J.

The present value of the buildings and equipment for the Astrophysical Observatory owned by the Government is estimated at $50,000. This estimate contemplates the cost required to replace the outfit for the purposes of the investigation.

WORK OF THE YEAR

Solar variation and forecasting.—The chief object of the work at present is to secure the most exact measurements of the variation of the sun in order to provide proper data for studying the influence of solar changes on weather conditions of the United States and the whole world. Accordingly, the efforts of the staff were devoted mainly to this purpose. The Government appropriations were sufficient only to maintain the work at Washington and Arizona, and to pay salaries of two observers at the exceptionally favorable station at Montezuma, Chile. This station was established in 1918, and has been maintained ever since by private funds of the Institution, supplemented by gifts of Mr. Roebling. Owing to further support by Mr. Roebling, it has been possible to receive daily telegrams reporting the solar radiation observations in Chile and in Arizona. These arrive at Washington within 24 hours of the observations in the field.

The experimental forecasts by Mr. H. H. Clayton for the city of New York, mentioned in last year's report, were continued. For this purpose daily telegrams of the condition of the sun were sent from Washington to Mr. Clayton at Canton, Mass. These usually reached him before noon on the day after the observations were made in Chile and Arizona. Making up his New York forecasts for three, four, and five days ahead, Mr. Clayton informed the Smithsonian by letter on the same afternoon. On Friday of each week he forecast the temperature departures for the ensuing week beginning Sunday, and about the end of each month he forecast the temperature departures for the ensuing month. These weekly and monthly forecasts were also mailed in advance to the Smithsonian Institution.

We have compared Clayton's forecasts with the events, using mathematical processes of verification which are not susceptible of personal bias. A moderate degree of foreknowledge is certainly indicated, both for the specific forecasts of three, four, and five days in advance, and for the more general average forecasts of weeks and months.

On May 2, 1925, a symposium on this subject was held at the United States Weather Bureau before the American Meteorological Society. At that time, Messrs. C. G. Abbot and H. H. Clayton explained the status of the measurements of solar variation, and their applications for forecasting. Later, these papers of Abbot and Clayton, and also a paper by Mr. G. Hoxmark, on the results reached since 1922 in the application of solar variation for official forecasts in Argentina, were published as Nos. 2825, 2826, and 2827 of the Smithsonian Miscellaneous Collections.

The costs of telegraphic advices and of Mr. Clayton's computing bureau have been borne by Mr. Roebling's gifts for these purposes, as also the cost of publication of the papers just mentioned.

No public forecasts have been made or will be made under the auspices of the Smithsonian Institution. Our entire purpose in the matter is, and has always been, to make such experiments as might indicate what value, if any, would attach to the introduction of a new variable, namely, the variation of the sun, in weather forecasting. Our forecasts are made privately and only as tests of the experimental conclusions.

Unfortunately, space writers in the public prints have not understood this and have attributed to the Smithsonian Institution forecasts of weather conditions far into the future. These, in reality, have been made by several private individuals entirely unconnected with the Institution. We take no responsibility for these prognostications, as we know as yet of no sound method by which they may be made.

A compilation of all results on the solar constant of radiation, from 1918 to November, 1924, was published as No. 2518 of Smithsonian Miscellaneous Collections.

The investigations hitherto made having indicated that a higher degree of accuracy in our solar measurements is needed to supply proper data for forecasting purposes, a very great deal of attention has been given to the elimination of small sources of error in the observations and reductions of solar radiation. Already the average deviation of individual days' results between Chile and Arizona is but one-half per cent. It follows that in order to attain higher accuracy we shall be obliged to regard sources of error which formerly we supposed would always be negligible.

This has led to the designing and construction of new apparatus for use in pyrheliometry, which eliminates the employment of the observer's watch altogether. It has also required the investigation of the infra-red and ultra-violet portions of the solar spectrum, beyond the usual limits of our daily spectrum observations. Still more important, it has led to a complete revision of the methods of measuring and reducing solar energy spectra. With these new modifications in mind, a complete re-reduction of all solar radiation work since the beginning of the year 1922 has been undertaken, and occupies the whole force at Washington.

Removal of Mount Harqua Hala station.—The station at Mount Harqua Hala, Ariz., first occupied in 1920, proves to be too far to the east, so that the summer months there are unsuitable for observing, because of the atmospheric conditions which go to bring about the severe thunderstorms of Arizona. Very few days of June, July, and August have been suitable for our exacting work, and even some of the spring months have been marred by long-continued haziness. Had weather conditions there been first-rate, the observers would gladly have suffered the excessive isolation of the place, which is almost wholly cut off from relaxations, but to make such a sacrifice fruitlessly is indeed very depressing.

Accordingly, investigations have been made which have fixed on a better site, both as regards weather conditions and comfort. This is chosen on Table Mountain, within the bounds of the Los Angeles County Park, about 30 miles northeast of Mount Wilson. Lying on the edge of the Mojave Desert, at 7,500 feet elevation, the weather observations indicate very decided improvement over Harqua Hala for our purpose. Add to this the convenience of access and pleasant surroundings and we have combined there great advantages.

Mr. John A. Roebling has added to his already great gifts sufficient means to enable necessary buildings to be erected on Table Mountain, and to remove the observing outfit thence from Harqua

Hala. The supervisors of the Los Angeles County Park have cordially assisted in the transfer, giving rights of occupancy, and extending the auto road quite to the doors of the proposed observatory, without expense to the Smithsonian Institution. It is expected to occupy Table Mountain beginning about October 1, 1925. Mr. Moore's energetic efforts in the preliminary arrangements and the preparation of buildings deserve high praise.

An expedition under Doctor Abbot occupied Mount Wilson in the summer and autumn of 1924. The solar cooker was rebuilt, as far as concerned its oven, its circulatory system for hot oil, and its insulation against heat losses. The new oil system was perfectly successful in avoiding all leaks, such as always hitherto have marred the operations. Also, the introduction of a larger reservoir, and especially of "Silocel," or diatomaceous bricks, for heat insulation proved highly satisfactory. The experiment was tried of introducing forced oil circulation by means of a little steam engine operated by the heat of the reservoir. This worked well mechanically, but proved unnecessary, as no higher temperatures of the ovens were reached when forced circulation was in operation.

It was intended to use a vacuum jacket about the heater tube, but the apparatus was not received in season. Without this crowning improvement the solar cooker worked fully as well as in 1920, when its reputation was first made, despite the fact that somewhat thicker insulation of the reservoir is needed, as the cooling curve shows. When this, and also the vacuum jacket, are applied, the machine should be highly satisfactory.

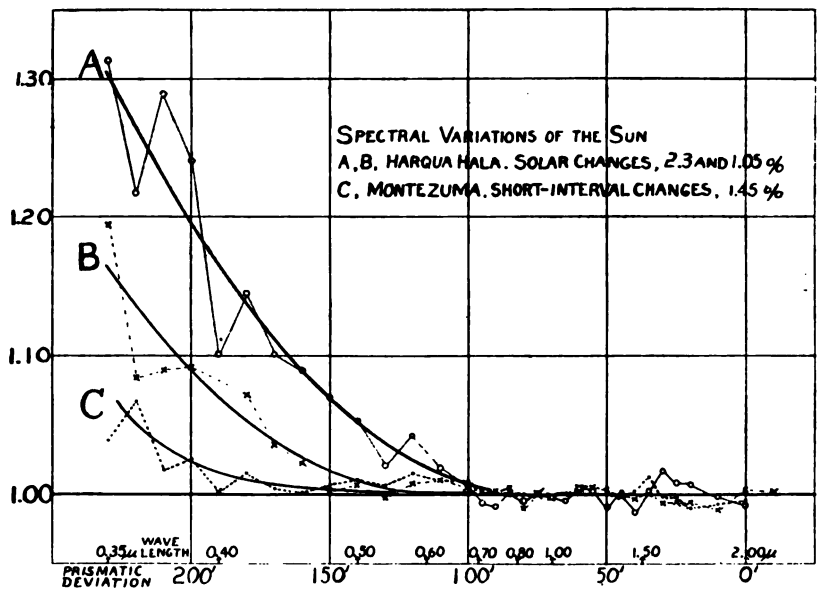
As noted in last year's report, the Fabry type of apparatus has been installed on Mount Wilson to measure the quantity of atmospheric ozone. This feeble constituent of the very high air is, we believe, very important in the economy of the earth's heat, as well as a fatal bar to observation of the most interesting part of the spectra of the sun and the hotter stars.

Having fully developed and tested the ozone outfit, photographic solar spectra of the ozone-absorption region of the ultra-violet were obtained in August, September, and October, 1925. Unfortunately the great forest fire east of Mount Wilson cut off a good many otherwise favorable days. By the generosity of Mr. Roebling a copy of the Moll spectrophotometer for measuring the plates has been procured from A. Hilger. The reductions are not yet made. Mr. Roebling's interest in this ozone research is so great that he has made a grant to enable Doctor Fabry himself to continue daily ozone measurements in France during a part of the year 1925.

The importance of studies of the variation of the sun's output of ultra-violet rays grows upon our attention. Not only the attack

on the ozone problem in that spectral region, but also the extraordinary relations of the ultra-violet rays to human, animal, and plant physiology are coming increasingly to the fore. Our own studies indicate that the solar variations are far greater for those rays than they are for the solar rays as a whole. Thus the accompanying figure indicates that when the solar constant of radiation changes by 1 per cent it means almost imperceptible change for the infra-red rays, but as much as 10 per cent or more for some rays of the ultra-violet.

In addition to the work at Mount Wilson on the solar cooker and the ozone of the higher atmosphere, much attention was paid to



Solar variation localized in the violet and ultra-violet

attempts to improve the radiometer and the stellar-spectrum apparatus, in the hope of going much further in studying the energy spectra of the stars. Much knowledge was gained which will be useful later on, and star-spectrum observations were made on several nights, but no actually completed advance in stellar spectra was attained. The way, however, is very clear now for future advance.

PERSONNEL

Mr. H. B. Freeman accepted service on the private Smithsonian roll as assistant at Harqua Hala in September, 1924, and succeeded Mr. L. B. Aldrich in charge at Montezuma on March 1, 1925. Mr. Aldrich returned to Washington.

Mr. E. E. Smith was employed on the private roll as assistant at Harqua Hala from February 9, 1925.

Mr. A. J. Ahearn assisted Doctor Abbot on Mount Wilson during the expedition of 1924.

SUMMARY

Much progress in the study of the variation of the sun and its application to weather forecasting has been made, as reported in publications Nos. 2818, 2825, 2826, and 2827 of the Smithsonian Miscellaneous Collections. Improvements in apparatus and methods designed to add to the accuracy of solar radiation measurements, and to make possible a valuable revision of existing values, are on foot. The station at Harqua Hala, having proved somewhat disappointing, is being removed to Table Mountain, in California, about 2,000 feet higher, but much more accessible. The solar cooker has been greatly improved. Measurements of atmospheric ozone are in progress. New devices were tried in stellar energy spectrum measurements and the way seems clear for great advances in that line.

Respectfully submitted.

C. G. ABBOT, *Director.*

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 8

REPORT ON THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

SIR: I have the honor to submit the following report on the operations of the United States Regional Bureau of the International Catalogue of Scientific Literature for the fiscal year ending June 30, 1925:

As has been stated in previous annual reports, actual publication of the catalogue was suspended in 1921 upon completion of the fourteenth annual issue. In conformity with an agreement reached at the International Convention held in Brussels in 1922, the work of this regional bureau, in common with others of the organization, has been continued but is confined to the collection of the data necessary to index the current scientific literature of the United States for the several years intervening between the cessation of publication and the present time. This procedure not only enables the organization to be kept intact but, when publication is resumed and the classification schedules are revised, data will be available to complete the catalogue.

It seems advisable to again outline the aim, scope, and need of the catalogue in view of the fact that the many new projects which have sprung up in minor fields, lacking harmony of purpose and cooperation of effort, have, even when taken collectively, entirely failed to supply the need of an International Catalogue of Scientific Literature.

The catalogue was started in 1901 with the aim and purpose of meeting the long-felt need of scientific investigators and librarians for an annual authors' and subject catalogue and index to the scientific literature of the world, a need felt even more to-day than in 1901. To this end, systematic classification schedules were prepared covering all recognized branches of science and each paper was not only catalogued and indexed, but also classified by means of these schedules, the result being equivalent to an analytical digest of each paper.

Financial support to enable the organization to properly function is urgent. The amount required is not great, measured in present-day terms, but is none the less essential. Between 1901 and the beginning of the war, necessary funds for publication were supplied by subscribers in the countries taking part in the enterprise. Only the actual cost of printing and publishing had to be met from these

funds as maintenance of the several regional bureaus was then, as now, provided for, in most cases, by direct governmental grants. However, the additional funds needed to meet the increased cost of printing and publishing, under war conditions, had to be met by the subscribers and these increases when expressed in the depreciated currency of many countries, resulted in impossible figures; consequently, publication had to be suspended.

When operations began in 1901, the price to subscribers of a complete set of the 17 annual volumes of the catalogue, comprising about 10,000 pages, was £17, the pound sterling being then at par. The American subscription price was, after adding shipping costs, $85. The income derived from subscriptions and the expenditures of the London Central Bureau, in charge of printing and publishing, approximately balanced in 1914, when war began. Since that time publishing costs, in England, have doubled and the value of the French franc has sunk to less than one-fourth, and the Italian lira to less than one-fifth of their respective par values. Without tabulation, it is obvious that a cost easily borne in these countries in 1901 has become impossible in 1925. It was never the intention for the International Catalogue to be a commercial enterprise, but rather the means of furnishing, at cost, to investigators and students data needed to keep them informed of the scientific progress of the world. Experience proves that international cooperation is the only means whereby the necessary data can be collected and prepared for such an index, but it is now apparent that some new source of revenue must be provided to print this data before publication can be resumed.

Could a sufficient endowment be obtained, the organization would again become self-supporting, as there is now a greater demand for the catalogue than ever before and a central bureau provided with its own publishing plant, or capital sufficient to make advantageous long-term contracts with properly equipped publishing houses, would be enabled to offset the increased cost of publication by the saving of the interest and other charges, which were necessary in 1901 to an organization doing business without capital. If it were possible to secure such an endowment in the United States, now the only country not unduly oppressed by the results of war, American students and investigators would be much benefited for, notwithstanding impoverished conditions, much advanced and valuable scientific work is being done abroad with which it is difficult to keep in touch without the annual volumes of the International Catalogue.

Respectfully submitted.

LEONARD C. GUNNELL,
Assistant in Charge.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 9

REPORT ON THE LIBRARY

R: I have the honor to submit the following report on the ities of the library of the Smithsonian Institution for the fiscal ended June 30, 1925.

CHANGES IN STAFF

uring the year there were several changes in the library staff. Paul Brockett, who had been connected with the Smithsonian itution for 38 years and had served since 1902 as its assistant rian, resigned to devote full time to his duties as assistant sec- y of the National Academy of Sciences. Mr. Brockett's suc- r, Mr. William L. Corbin, formerly professor of English in on University, assumed the position of librarian on Septem- 15.

r. Newton P. Scudder, assistant librarian of the United States onal Museum, retired from active service March 9, on account ge and disability, and died May 19. Mr. Scudder became con- d with the Smithsonian Institution in 1882, where he remained nore than 40 years, the last 38 of which he was assistant libra- of the National Museum. Perhaps never again will the eum library have as its reference chief a person so fully ac- nted with its collections as he was, or so willing to give of his vledge and time to those who came with questions.

r. Lester D. Condit, assistant in the library since 1918, was ted a furlough in October to resume his university course. He since withdrawn from the library staff and the position was l by the appointment of Miss Sara L. Young, a graduate of ira College and of Drexel Institute Library School. Miss ng has worked with scientific publications for many years, ially as cataloguer for the American Philosophical Society and Library of Congress.

EXCHANGE OF PUBLICATIONS

e increase of the Smithsonian Library is due chiefly to the ange of publications between the Smithsonian Institution and learned institutions and societies of the world. Many of

these publications come to the library direct, others through the International Exchange Service, with which the library is in close cooperation. During the past year the library received 30,496 packages by mail and 2,408 through the exchange. Especially large sendings were received from Barcelona, Budapest, and Warsaw. As usual, after these packages had been opened, the items were stamped, entered, and sent to the appropriate branches of the library. The large number received was due partly to the special effort made by the periodical and correspondence divisions in noting wants and writing follow-up letters. In fact, most of the 1,181 letters sent out by the library had to do with these wants. The result was that of the 2,478 missing volumes and parts requested, 2,009 were obtained, a gain of nearly 30 per cent over last year. Exchange relations were also opened with a number of new societies.

MAIN LIBRARY

Many of the items mentioned above were, of course, forwarded day by day to the Smithsonian deposit in the Library of Congress, where they were made available to the public. The number of these was 7,287, of which there were 5,184 complete volumes, 1,421 parts of volumes, 390 pamphlets, and 292 charts. Documents of foreign governments, more or less statistical in character, to the number of 7,408, were also sent, without being stamped or entered, to the document division of the Library of Congress.

Dissertations were received from various universities at home and abroad, such as Basel, Berlin, Bern, Breslau, Copenhagen, Cornell, Dresden, Erlangen, Frankfurt a. M., Freiburg, Ghent, Giessen, Greifswald, Halle, Heidelberg, Helsingfors, Leipzig, Leydén, Lund, Marburg, Paris, Pennsylvania, Strasbourg, Tübingen, Uppsala, Utrecht, and Zürich; and from technical schools at Berlin, Delft, Karlsruhe, and Zürich.

OFFICE LIBRARY

The office library, which includes the publications of several learned societies, the aeronautical collection, the art-room collection, the employees' library, and various books, chiefly of a reference nature, in the administrative offices, was increased during the year by 312 volumes, 5 parts of volumes, and 4 pamphlets. Of these, 34 were added to the aeronautical collection.

One of the most important additions to this library was a de luxe copy of the Warner Library of the World's Best Literature, the gift of Secretary Walcott; another was Seven Log-Books Concerning the Arctic Voyages of Capt. William Scoresby, sr., of Whitby, England, presented by the Explorers Club of New York.

The circulation of the library was 2,359, of which 1,956 were magazines borrowed from the reading room. Many more volumes and periodicals were consulted in the reference room. The books most in demand were the transactions of the learned societies, the aeronautical collection, and several important individual works, such as Combarelles aux Ezyies, by Abbé Breuil and others, a book finally assigned to the Smithsonian deposit.

The work done during the year on the general catalogue of the Smithsonian library, which is kept in the office reading room, may be summarized as follows:

Volumes and pamphlets catalogued	4,509
Volumes recatalogued	264
Charts catalogued	324
Cards typed	2,157
Library of Congress cards filed	1,078
New authors added	393

MUSEUM LIBRARY

The library of the United States National Museum contains 65,148 volumes and 102,951 pamphlets, a total of 168,099. Of these, 1,457 volumes and 1,894 pamphlets were added during the year.

While most of these accessions were obtained by exchange of publications, or by purchase, many came by gift. Among the donors were Mr. W. I. Adams, Miss M. D. Ashton, Dr. Marcus Benjamin, Mr. A. H. Clark, Mr. F. W. Clarke, Dr. W. H. Dall, Mr. J. A. Gallagher, Mr. L. C. Gunnell, Dr. O. P. Hay, Dr. W. H. Holmes, Dr. A. Hrdlička, Dr. W. R. Maxon, Dr. G. S. Miller, jr., Mr. W. de C. Ravenel, Dr. C. W. Richmond, Mr. S. A. Rohwer, Mr. E. V. Shannon, Mr. R. C. Smith, Mr. B. H. Swales, and Dr. C. D. Walcott. The gifts of Secretary Walcott to the division of geology and paleontology and of Doctor Dall to that of mollusks were generous, as usual, the latter numbering 97 titles. The gifts of Doctor Richmond to the division of birds were also large. But the outstanding gift of the year was the entomological library, numbering about 4,500 volumes and pamphlets, chiefly on Coleoptera, left to the Museum by the late Col. Thomas L. Casey, and increased by the generosity of Mrs. Casey. This is one of the best collections on its subject in the United States, and contains many rare items. It will be made available to the curators as soon as possible and will be deposited in the section of insects.

In the course of the year several thousand cards of the Concilium Bibliographicum were filed, 14,329 parts of periodicals were entered, 2,623 volumes and pamphlets were catalogued, and 9,000 cards were added. Books borrowed from the Library of Congress numbered 1,628 and from other libraries 112, chiefly for the use of the

curators, and about the same number were returned. The loans totaled 8,148, of which 5,861 were made to the sectional libraries, and more than ever before to universities, such as Chicago, Illinois, Michigan, and Minnesota, and to other institutions, both in Washington and elsewhere. Many publications were consulted in the reference room, not only by members of the Museum staff but also by others, especially Government employees and scholars connected with various universities and museums, American and foreign. Two hundred and fifty-six volumes were bound.

The number of sectional libraries in the Museum is now 38. These, while under the immediate care of the administrative and scientific staffs, are at the same time very real and important parts of the general library and are administered as such. Their resources are its resources, and their needs are its needs. And these needs are often most urgent—the very ones to which the librarian feels he should give his best thought and help. The past year he has devoted much time to the study of these resources and needs, and to the solution of the problems they have disclosed. The sectional libraries are as follows:

Administration.
Administrative assistant's office.
American archeology.
Anthropology.
Biology.
Birds.
Botany.
Echinoderms.
Editor's office.
Ethnology.
Fishes.
Foods.
Geology.
Graphic arts.
History.
Insects.
Invertebrate paleontology.
Mammals.
Marine invertebrates.
Mechanical technology.
Medicine.
Mineral technology.
Minerals.
Mollusks.
National Gallery of Art.
Old World archeology.
Organic chemistry.
Paleobotany.
Photography.
Physical anthropology.
Property clerk's office.
Reptiles and batrachians.
Superintendent's office.
Taxidermy.
Textiles.
Vertebrate paleontology.
War library.
Wood technology.

TECHNOLOGICAL LIBRARY

The technological library, the division of the Museum Library which contains the collections of especial interest to the curators of arts and industries, is located in the Old Museum Building. During the year the reorganization of its material was continued. Its accessions numbered 152 volumes and 353 pamphlets, and its loans 150.

ASTROPHYSICAL OBSERVATORY LIBRARY

Additions to the library of the Astrophysical Observatory numbered 114 volumes, 32 parts of volumes, and 89 pamphlets. The number of volumes bound was 81. Exact records of loans can not be given, as they are included with those of the office library.

This is one of the most important of the smaller branches of the Smithsonian library and is much in use. Thanks to the generosity of a friend, its collections will be enlarged and made more available in the immediate future.

BUREAU OF AMERICAN ETHNOLOGY LIBRARY

The activities of the library of the Bureau of American Ethnology are described in the report of the chief of that bureau, by whom the library is administered.

NATIONAL GALLERY OF ART LIBRARY

As the National Gallery of Art is housed in the Natural History Building, its library is at present administered as a sectional library of the National Museum. This library, although possessing only 961 titles, of which 426 are volumes and 535 pamphlets, has been most carefully selected, and should grow rapidly when given room in the National Gallery Building now in prospect. Its accessions during the year were 118 volumes, 478 parts of volumes, and 52 pamphlets.

FREER GALLERY OF ART LIBRARY

The library of the Freer Gallery of Art is solely a reference library, restricted to the interests represented in the collections of art objects—that is to say, to the arts and cultures of the Far East, of India and Persia, and the nearer east; to the life and works of James McNeill Whistler and of certain other American painters whose pictures are owned by the gallery; and further, to a very limited degree, to that field of study represented by the Biblical manuscripts of the fourth and fifth centuries, which, as the possessions of the Freer Gallery, are known as the Washington manuscripts. All books and library facilities are at the service of the public. During the year 200 persons availed themselves of these privileges. Most of the more serious students came from a distance for the especial purpose of studying various parts of the collections and the books relating to them.

The library comprises about 2,200 books in English, French, German, and Dutch and almost 300 in Chinese, Japanese, and Tibetan, with necessary dictionaries. In addition, there are a good many volumes on loan from the Library of Congress. During the year 127 volumes and 127 pamphlets were added to the library.

NATIONAL ZOOLOGICAL PARK LIBRARY

Early in the year the cataloguing of the library of the National Zoological Park was completed, and its duplicates and other superfluous material were removed. Its accessions, including the old items which had been in the library for some time but which had never been entered, were 475 volumes, 1 part, and 2 pamphlets.

SUMMARY OF ACCESSIONS

The accessions for the year, with the exception of those to the library of the Bureau of American Ethnology, may be summarized as follows:

Library	Volumes	Other publications	Total
Astrophysical Observatory	114	121	235
Freer Gallery of Art	90	127	217
National Gallery of Art	118	530	648
National Zoological Park	475	3	478
Smithsonian deposit, Library of Congress	5,184	2,103	7,287
Smithsonian office	312	9	321
United States National Museum	1,457	1,894	3,351
Total	7,750	4,787	12,537

An estimate of the number of volumes, pamphlets, and charts in the Smithsonian library (including the Smithsonian deposit in the Library of Congress) on June 30, 1925, was as follows:

Volumes	507,750
Pamphlets	137,558
Charts	23,462
Total	668,770

This number does not include the many thousands of parts of volumes now in the library awaiting completion of the volumes.

SPECIAL ACTIVITIES

Besides carrying on the usual work of the year, the library staff gave as much time as possible to special problems, such as sorting accumulations of miscellaneous material in different parts of the library; bringing together superfluous duplicates and separates to be disposed of later by gift or by piece for piece exchange; inventorying the sectional libraries; making shelf lists for the two divisions of the Museum library; advancing the cataloguing of several of the special collections, particularly the Iddings, Gill, and Knab; furthering the cause of science by making part of the Lacoe collec-

n available for semipermanent deposit with colleges, universities, d museums; and responding to many requests involving reference rk for various Government departments and for institutions and lividuals the country over.

Furthermore, the librarian made an extensive survey of the con-ion of the library and submitted a detailed report of its needs to e secretary. This survey revealed many problems pressing for lution, problems that can be solved only by a liberal increase, er a term of years, of the funds appropriated for library purposes. ese increased funds should be at hand at the earliest possible ment, to the end that more than 8,000 volumes may be bound; at more than 30,000 books and pamphlets, including several almost iceless collections, may be accessioned and catalogued; that a dic-nary catalogue of the entire library (including the sectional raries), except, of course, the Smithsonian deposit, may be made; d that other urgent pieces of work connected with the reorgani-ion and development of the library may be done—in a word, that e rich collections of the library may, by a more complete applica-n of modern methods, be made available without undue delay to entific workers, both in Washington and elsewhere. Then and en only will the library be ready to do its full part toward the crease and diffusion of knowledge among men.

Respectfully submitted.

WILLIAM L. CORBIN,
Librarian.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 10

REPORT ON THE PUBLICATIONS

SIR: I have the honor to submit the following report on the publications of the Smithsonian Institution and its branches during the year ending June 30, 1925:

The Institution proper published during the year 12 papers in the series of Miscellaneous Collections, 2 annual reports and pamphlet copies of 48 articles in the general appendixes to these reports, and 6 special publications. The Bureau of American Ethnology published 1 bulletin and 2 annual reports. The United States National Museum issued 1 annual report, 2 volumes of proceedings, 2 complete bulletins, 1 part of a bulletin, 3 parts of 2 volumes in the series of Contributions from the United States National Herbarium, and 66 separates from the proceedings. The National Gallery of Art issued four catalogues of special exhibitions.

Of these publications there were distributed during the year 171,865 copies, which included 262 volumes and separates of the Smithsonian Contributions to Knowledge, 24,008 volumes and separates of the Smithsonian Miscellaneous Collections, 26,825 volumes and separates of the Smithsonian annual reports, 6,102 Smithsonian special publications, 104,596 volumes and separates of the various series of National Museum publications, 7,354 publications of the Bureau of American Ethnology, 114 publications of the National Gallery of Art, 68 volumes of the Annals of the Astrophysical Observatory, 44 reports on the Harriman Alaska expedition, 1,057 reports of the American Historical Association, and 1,435 publications presented to but not issued directly by the Smithsonian Institution or its branches.

SMITHSONIAN MISCELLANEOUS COLLECTIONS

Of the Smithsonian Miscellaneous Collections, volume 69, 1 paper was issued; volume 75, 2 papers; volume 76, 3 papers; volume 77, 6 papers; in all, 12 papers as follows:

VOLUME 69

No. 1. Smithsonian Meteorological Tables, Fourth Revised Edition. First Reprint. December 5, 1924. (Publ. 2493.)

VOLUME 75

No. 2. Cambrian Geology and Paleontology. V. No. 2. Cambrian and Lower Ozarkian Trilobites. By Charles D. Walcott. July 19, 1924. Pp. 53–60, pls. 13–14. (Publ. 2788.)

No. 3. Cambrian Geology and Paleontology. V. No. 3. Cambrian and Ozarkian Trilobites. By Charles D. Walcott. June 1, 1925. Pp. 61–146, pls. 15–24. (Publ. 2823.)

VOLUME 76

No. 11. The Freshfield Glacier, Canadian Rockies. By Howard Palmer. August 2, 1924. 16 pp., 9 pls., 3 text figs. (Publ. 2757.)

No. 12. "Adaptations" to Social Life: The Termites (Isoptera). By Thomas E. Snyder. September 2, 1924. 14 pp., 3 pls. (Publ. 2786.)

No. 13. Preliminary Archeological Explorations at Weeden Island, Florida. By J. Walter Fewkes. October 14, 1924. 26 pp., 21 pls., 1 text fig. (Publ. 2787.)

VOLUME 77

No. 1. A Chapter in the History of Zoological Nomenclature. By Leonhard Stejneger. August 30, 1924. 21 pp. (Publ. 2789.)

No. 2. Explorations and Field Work of the Smithsonian Institution in 1924. April 17, 1925. 136 pp., 138 text figs. (Publ. 2794.)

No. 3. Provisional Solar Constant Values, August, 1920, to November, 1924. By C. G. Abbot and Colleagues. February 17, 1925. 38 pp., 2 text figs. (Publ. 2818.)

No. 5. Solar Variation and Forecasting. By C. G. Abbot. June 20, 1925. 27 pp., 18 figs. (Publ. 2825.)

No. 6. Solar Radiation and Weather, or Forecasting Weather from Observations of the Sun. By H. H. Clayton. June 20, 1925. 64 pp., 45 text figs. (Publ. 2826.)

No. 7. Solar Radiation and the Weekly Weather Forecast of the Argentine Meteorological Service. By Guillermo Hoxmark. June 20, 1925. 23 pp., 5 text figs. (Publ. 2827.)

In press at close of year

VOLUME 77

No. 4. An Introduction to the Morphology and Classification of the Foraminifera. By Joseph A. Cushman. July 21, 1925. 77 pp., 16 pls., 11 text figs. (Publ. 2824.)

SMITHSONIAN ANNUAL REPORTS

Report for 1922.—The complete volume of the Annual Report of the Board of Regents for 1922 was received from the Public Printer in October, 1924.

Annual Report of the Board of Regents of the Smithsonian Institution, showing operations, expenditures, and condition of the Institution for the year ending June 30, 1922. xii+554 pp., 142 pls., 49 text figures. (Publ. 2724.)

The appendix contained the following papers:

Who will promote science? by C. G. Abbot.

Recent discoveries and theories relating to the structure of matter, by Karl Taylor Compton.

The architecture of atoms and a universe built of atoms, by C. G. Abbot.
Aeronautic research, by Joseph S. Ames.
Photosynthesis and the possible use of solar energy, by H. A. Spoehr.
Fogs and clouds, by W. J. Humphreys.
Some aspects of the use of the annual rings of trees in climatic study, by Prof. A. E. Douglass.
The age of the earth, by T. C. Chamberlin and others.
How deep is the ocean? by C. G. Abbot.
Two decades of genetic progress, by E. M. East.
Observations on a Montana beaver canal, by S. Stillman Berry.
The Republic of Salvador, by Paul C. Standley.
The tent caterpillar, by R. E. Snodgrass.
The life history and habits of the solitary wasp, *Philanthus gibbosus*, by Edward G. Reinhard.
The use of idols in Hopi worship, by J. Walter Fewkes.
Two Chaco Canyon pit houses, by Neil M. Judd.
Collections of Old World archeology in the United States National Museum, by I. M. Casanowicz.
The "Shake Religion" of Puget Sound, by T. T. Waterman.
Excavations at Askalon, by Prof. J. Garstang.
National efforts at home making, by F. H. Newell.
Ideals of the telephone service, by John J. Carty.

Report for 1923.—The complete volume of the Report of the Board of Regents for 1923 was received from the Public Printer in June, 1925.

Annual Report of the Board of Regents of the Smithsonian Institution showing operations, expenditures, and condition of the Institution for the year ending June 30, 1923. xii+578 pp., 100 pls., 72 text figures. (Publ. 2758.)

The appendix contained the following papers:

The constitution and evolution of the stars, by Henry Norris Russell.
The sun and sunspots, 1820–1920, by E. Walter Maunder.
Joining the electric wave and heat wave spectra, by E. F. Nichols and J. D. Tear.
The possibilities of instrumental development, by George E. Hale.
The borderland of astronomy and geology, by Prof. A. S. Eddington.
Atmospheric nitrogen fixation, by Eric A. Lof.
The place of proteins in the diet in the light of the newer knowledge of nutrition, by H. H. Mitchell.
The story of the production and uses of ductile tantalum, by Clarence W. Balke.
The composition of the earth's interior, by L. H. Adams and N. L. Williamson.
Diamond-bearing peridotite in Pike County, Ark., by H. D. Miser and C. S. Ross.
Recent progress and trends in vertebrate paleontology, by W. D. Matthew.
Animals in the National Zoological Park, by N. Hollister.
The burrowing rodents of California as agents in soil formation, by Joseph Grinnell.
The natural history of China, by A. de C. Sowerby.
Life in the ocean, by Austin H. Clark.

A study of the flight of sea gulls, by R. C. Miller.
Insect musicians and their instruments, by R. E. Snodgrass.
The gardens of ancient Mexico, by Mrs. Zelia Nuttall.
The Hovenweep National Monument, by J. Walter Fewkes.
The origin and antiquity of the American Indian, by A. Hrdlička.
Ruined cities of Palestine, east and west of the Jordan, by Arthur W. Sutton.
The anthropological work of Prince Albert 1st of Monaco and recent progress in human paleontology in France, by Marcellin Boule.
The utilization of volcanic steam in Italy.
Proposed tidal hydroelectric power development of the Petitcodiac and Memramcook Rivers, by W. Rupert Turnbull.
Sir James Dewar, by Sir James Crichton-Browne.
J. C. Kapteyn, by A. Van Maanen.
Julius Von Hann, by C. G. S.

Report for 1924.—The report of the executive committee and proceedings of the Board of Regents of the Institution, and the report of the secretary, both forming parts of the annual report of the Board of Regents to Congress, were issued in pamphlet form in December, 1924.

Report of the executive committee and proceedings of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1924. 14 pp. (Publ. 2792.)
Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1924. 124 pp. (Publ. 2791.)

The general appendix to this report, which was in press at the close of the year, contains the following papers:

The origin of the solar system, by J. H. Jeans.
The electrical structure of matter, by Prof. Sir Ernest Rutherford.
The physicist's present conception of an atom, by R. S. Millikan.
The vacuum—there's something in it, by W. R. Whitney.
The use of radium in medicine, by Antoine Béclère.
Clear fused quartz made in the electric furnace, by Edward R. Berry.
The drifting of the continents, by Pierre Termier.
The probable solution of the climatic problem in geology, by William Ramsay.
A modern managerie; more about the National Zoological Park, by N. Hollister.
Nests and nesting habits of the American eagle, by Francis H. Herrick.
The breeding places of the eel, by Johs. Schmidt.
Cankerworms, by R. E. Snodgrass.
A botanical trip to Ecuador, Peru, and Bolivia, by A. S. Hitchcock.
Orchid collecting in Central America, by Paul C. Standley.
Sketches from the notebook of a naturalist-traveler in Oceania during the year 1923, by Casey A. Wood.
Historical tradition and oriental research, by James Henry Breasted.
Shamanism of the natives of Siberia, by I. M. Casanowicz.
Egypt as a field for anthropological research, by Prof. P. E. Newberry.
North American Indian dwellings, by T. T. Waterman.
The nature of language, by R. L. Jones.
John Mix Stanley, artist-explorer, by David I. Bushnell.
Herluf Winge, by Th. Mortensen.

SPECIAL PUBLICATIONS

Smithsonian Mathematical Tables—Hyperbolic Functions, Third reprint. Prepared by George F. Becker and C. E. Van Orstrand. December 10, 1924. 321 pp. (Publ. 1871.)

The Relations of the Smithsonian Institution to the National Government. February 5, 1925. 8 pp.

Niagara Falls: Its Power Possibilities and Preservation. By Samuel S. Wyer. January 15, 1925. 28 pp., 2 pls., 4 figs. (Publ. 2820.)

Title page and index of Volume 67, Smithsonian Miscellaneous Collections. (Publ. 2790.)

Title page and contents of Volume 74, Smithsonian Miscellaneous Collections. (Publ. 2821.)

Title page and contents of Volume 76, Smithsonian Miscellaneous Collections. (Publ. 2922.)

PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM

The publications of the National Museum are: (*a*) The annual report, (*b*) the Proceedings of the United States National Museum, and (*c*) the Bulletin of the United States National Museum, which includes the contributions from the United States National Herbarium. The editorship of these publications is vested in Dr. Marcus Benjamin.

During the year ending June 30, 1925, the Museum published 1 annual report, 2 volumes of proceedings, 2 complete bulletins, 1 part of a bulletin, 3 parts of 2 volumes in the series Contributions from the United States National Herbarium, and 66 separates from the proceedings.

The issues of the bulletins were as follows:

Bulletin 100. Contributions to the Biology of the Philippine Archipelago and Adjacent Regions. Volume 6, part 1. Marine Diatoms of the Philippine Islands. By Albert Mann.

Bulletin 129. The Spider Crabs of America. By Mary J. Rathbun.

Bulletin 130. Life Histories of North American Wild Fowl. Order Anseres (Part). By Arthur Cleveland Bent.

Of the separate papers of the Contributions from the United States National Herbarium the following were issued:

Volume 20, part 13. Revision of the American Species of Rinorea. New Plants from Venezuela. Hemibaccharis. A new Genus of Baccharidinae. By S. F. Blake.

Volume 20, part 14. The American Species of Canavalia and Wenderothia. By C. V. Piper.

Volume 23, part 4. Trees and Shrubs of Mexico. (Passifloraceae-Scrophulariaceae.) By Paul C. Standley.

Of the separates from the proceedings, 4 were from volume 64, 15 from volume 65, 31 from volume 66, and 16 from volume 67.

PUBLICATIONS OF THE NATIONAL GALLERY OF ART

The National Gallery of Art issued during the year the following publications:

Catalogue of a collection of water-color paintings of the Grand Canyon of the Colorado, Yellowstone National Park, Yosemite Valley, Zion National Park, Utah National Park, and the Monterey Coast of California, by Mr. Gunnar Widforss. On view in the National Gallery, December, 1924, to January, 1925. 4 pp.

Catalogue of a collection of busts of prominent personages in bronze and terra cotta, by Mrs. Nancy Cox-McCormack. On view in the National Gallery, December 16, 1924, to January 16, 1925. 4 pp.

Catalogue of a collection of portraits and studies in different techniques, by Leo Katz, of Vienna, Austria. On view in the National Gallery, January 16 to February 15, 1925. 4 pp.

Catalogue of recent miniature portraits by Alyn Williams, P. R. M. S. (president Royal Miniature Society), and portrait busts in bronze and plaster, relief portraits, medallions, carvings in precious and semiprecious stones, and some great seals, by Cecil Thomas, R. M. S. On view in the National Gallery, March 3 to March 22, 1925. 8 pp.

PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY

The editorial work of the Bureau of American Ethnology is under the direction of Mr. Stanley Searles, editor. During the year, there were published two annual reports and one bulletin as follows:

Thirty-eighth Annual Report. Accompanying paper: An Introductory Study of the Arts, Crafts, and Customs of the Guiana Indians (Roth). vii, 743 pp., 183 pls., 341 figs.

Thirty-ninth Annual Report. Accompanying paper: The Osage Tribe: The Rite of Vigil (La Flesche). 636 pp., 17 pls., 4 figs. (Received July 13, 1925.)

Bulletin 78. Handbook of the Indians of California (Kroeber). xviii, 995 pp., 83 pls., 78 figs. (Received July 17, 1925.)

At the close of the year there were in press or in preparation three annual reports as follows:

Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox Indian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society Known as "Those Who Worship the Little Spotted Buffalo"; The Traditional Origin of the Fox Society Known as "The Singing Around Rite." (Michelson.)

Forty-first Annual Report. Accompanying paper: Salish Basketry (Boas).

Forty-second Annual Report. Accompanying paper: Social Organization and Social Usages of the Indians of the Creek Confederacy; Religious beliefs and medical practices of the Creek Indians (Swanton).

REPORT OF THE AMERICAN HISTORICAL ASSOCIATION

The annual reports of the American Historical Association are transmitted by the association to the Secretary of the Smithsonian

Institution and are communicated by him to Congress as provided by the act of incorporation of the association.

Volume II, Parts I and II, of the annual report for 1919 and the supplemental volume to the report for 1921, entitled "Writings in American History," were issued during the year. The annual reports for 1920, 1921, and 1922, and the supplemental volume to the report for 1922 were in press at the close of the year.

REPORT OF THE NATIONAL SOCIETY, DAUGHTERS OF THE AMERICAN REVOLUTION

The manuscript of the Twenty-seventh Annual Report of the National Society, Daughters of the American Revolution, was transmitted to Congress, in accordance with the law, on December 8, 1924.

SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION

The editor has continued to serve as secretary of the Smithsonian advisory committee on printing and publication, to which are referred for consideration and recommendation all manuscripts offered to the Institution and its branches. Five meetings were held during the year and 75 manuscripts acted upon.

Respectfully submitted.

W. P. TRUE, *Editor.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

○

REPORT OF THE SECRETARY OF THE SMITHSONIAN INSTITUTION

FOR THE YEAR ENDING JUNE 30

1926

(Publication 2877)

WASHINGTON
GOVERNMENT PRINTING OFFICE
1926

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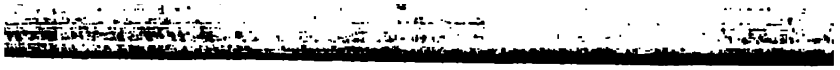

Congr. Earl C. Michener
5-12-1927

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THE SMITHSONIAN INSTITUTION

June 30, 1926

Presiding officer ex officio.—CALVIN COOLIDGE, President of the United States.
Chancellor.—WILLIAM HOWARD TAFT, Chief Justice of the United States.

Members of the Institution:

CALVIN COOLIDGE, President of the United States.
CHARLES G. DAWES, Vice President of the United States.
WILLIAM HOWARD TAFT, Chief Justice of the United States.
FRANK B. KELLOGG, Secretary of State.
ANDREW W. MELLON, Secretary of the Treasury.
DWIGHT FILLEY DAVIS, Secretary of War.
JOHN G. SARGENT, Attorney General.
HARRY S. NEW, Postmaster General.
CURTIS D. WILBUR, Secretary of the Navy.
HUBERT WORK, Secretary of the Interior.
WILLIAM M. JARDINE, Secretary of Agriculture.
HERBERT CLARK HOOVER, Secretary of Commerce.
JAMES JOHN DAVIS, Secretary of Labor.

Regents of the Institution:

WILLIAM HOWARD TAFT, Chief Justice of the United States. Chancellor.
CHARLES G. DAWES, Vice President of the United States.
REED SMOOT, Member of the Senate.
GEORGE WHARTON PEPPER, Member of the Senate.
WOODBRIDGE N. FERRIS, Member of the Senate.
ALBERT JOHNSON, Member of the House of Representatives.
R. WALTON MOORE, Member of the House of Representatives.
WALTER H. NEWTON, Member of the House of Representatives.
CHARLES F. CHOATE, Jr., citizen of Massachusetts.
HENRY WHITE, citizen of Washington, D. C.
ROBERT S. BROOKINGS, citizen of Missouri.
IRWIN B. LAUGHLIN, citizen of Pennsylvania.
FREDERIC A. DELANO, citizen of Washington, D. C.
DWIGHT W. MORROW, citizen of New Jersey.

Executive committee.—HENRY WHITE, FREDERIC A. DELANO, R. WALTON MOORE.
Secretary of the Institution.—CHARLES D. WALCOTT.
Assistant Secretary.—C. G. ABBOT.
Assistant Secretary.—ALEXANDER WETMORE.
Chief Clerk.—HARRY W. DORSEY.
Accounting and disbursing agent.—N. W. DORSEY.
Editor.—W. P. TRUE.
Librarian.—WILLIAM L. CORBIN.
Appointment clerk.—JAMES G. TRAYLOR.
Property clerk.—J. H. HILL.

NATIONAL MUSEUM

Keeper ex officio.—CHARLES D. WALCOTT, Secretary of the Smithsonian Institution.
Assistant Secretary (in charge).—ALEXANDER WETMORE.
Administrative assistant to the Secretary.—W. DE C. RAVENEL.
Head curators.—WALTER HOUGH, LEONHARD STEJNEGER, GEORGE P. MERRILL.
Curators.—PAUL BARTSCH, R. S. BASSLER, T. T. BELOTE, AUSTIN H. CLARK, F. W. CLARKE, F. V. COVILLE, W. H. DALL, CHARLES W. GILMORE, WALTER HOUGH, L. O. HOWARD, ALEŠ HRDLIČKA, NEIL M. JUDD, H. W. KRIEGER, FREDERICK L. LEWTON, GEORGE P. MERRILL, GERRIT S. MILLER, jr., CARL W. MITMAN, ROBERT RIDGWAY, WALDO L. SCHMITT, LEONHARD STEJNEGER.
Associate curators.—J. M. ALDRICH, W. R. MAXON, CHARLES W. RICHMOND, J. N. ROSE, PAUL C. STANDLEY, DAVID WHITE.
Chief of correspondence and documents.—H. S. BRYANT.
Disbursing agent.—N. W. DORSEY.
Superintendent of buildings and labor.—J. S. GOLDSMITH.
Editor.—MARCUS BENJAMIN.
Photographer.—ARTHUR J. OLMSTED.
Property clerk.—W. A. KNOWLES.
Engineer.—C. R. DENMARK.
Shipper.—L. E. PERRY.

NATIONAL GALLERY OF ART

Director.—WILLIAM H. HOLMES.

FREER GALLERY OF ART

Curator.—JOHN ELLERTON LODGE.
Associate curator.—CARL WHITING BISHOP.
Assistant curator.—GRACE DUNHAM GUEST.
Associate.—KATHARINE NASH RHOADES.
Superintendent.—JOHN BUNDY.

BUREAU OF AMERICAN ETHNOLOGY

Chief.—J. WALTER FEWKES.
Ethnologists.—JOHN P. HARRINGTON, J. N. B. HEWITT, FRANCIS LA FLESCHE, TRUMAN MICHELSON, JOHN R. SWANTON.
Editor.—STANLEY SEARLES.
Librarian.—ELLA LEARY.
Illustrator.—DE LANCEY GILL.

INTERNATIONAL EXCHANGES

Assistant secretary (in charge).—C. G. ABBOT.
Chief clerk.—C. W. SHOEMAKER.

NATIONAL ZOOLOGICAL PARK

Director.—WILLIAM M. MANN.
Assistant director.—A. B. BAKER.

ASTROPHYSICAL OBSERVATORY

Director.—C. G. ABBOT.
Research assistant.—F. E. FOWLE, Jr.
Research assistant.—L. B. ALDRICH.

REGIONAL BUREAU FOR THE UNITED STATES, INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

Assistant in charge.—LEONARD C. GUNNELL.

REPORT

OF THE

RETARY OF THE SMITHSONIAN INSTITUTION

CHARLES D. WALCOTT

FOR THE YEAR ENDING JUNE 30, 1926

Board of Regents of the Smithsonian Institution:

TLEMEN: I have the honor to submit herewith the customary
l report showing the activities and condition of the Smith-
Institution and the Government bureaus under its adminis-
charge during the fiscal year ended June 30, 1926. The
3 pages of the report contain an account of the affairs of the
ıtion, and in Appendixes 1 to 10 are given more detailed sum-
of the operations of the United States National Museum, the
ıal Gallery of Art, the Freer Gallery of Art, the Bureau of
can Ethnology, the International Exchanges, the National
ical Park, the Astrophysical Observatory, the United States
ıal Bureau of the International Catalogue of Scientific Litera-
he Smithsonian Library, and of the publications issued under
rection of the Institution.

THE SMITHSONIAN INSTITUTION

THE ESTABLISHMENT

Smithsonian Institution was created by act of Congress in
according to the terms of the will of James Smithson, of
nd, who in 1826 bequeathed his property to the United States
erica, "to found at Washington, under the name of the Smith-
Institution, an establishment for the increase and diffusion of
edge among men." In receiving the property and accepting
ust, Congress determined that the Federal Government was
ıt authority to administer the trust directly, and therefore con-
d an "establishment" whose statutory members are "the
ent, the Vice President, the Chief Justice, and the heads of the
ive departments."

THE BOARD OF REGENTS

The affairs of the Institution are administered by a Board of Regents whose membership consists of "the Vice President, the Chief Justice, three Members of the Senate, and three Members of the House of Representatives, together with six other persons other than Members of Congress, two of whom shall be resident in the city of Washington, and the other four shall be inhabitants of some State, but no two of them of the same State." One of the Regents is elected chancellor by the board; in the past the selection has fallen upon the Vice President or the Chief Justice; and a suitable person is chosen by the Regents as secretary of the Institution, who is also secretary of the Board of Regents and the executive officer directly in charge of the Institution's activities.

The following changes occurred in the personnel of the board during the year: The Hon. George Gray, of Delaware, died August 7, 1925, and Mr. Dwight W. Morrow, of New Jersey, was appointed a citizen Regent on January 7, 1926, to fill the vacancy thus created.

The roll of Regents at the close of the fiscal year was as follows: William H. Taft, Chief Justice of the United States, chancellor; Charles G. Dawes, Vice President of the United States; members from the Senate—Reed Smoot, George Wharton Pepper, Woodbridge N. Ferris; members from the House of Representatives—Albert Johnson, R. Walton Moore, Walter H. Newton; citizen members—Charles F. Choate, jr., Massachusetts; Henry White, Washington, D. C.; Robert S. Brookings, Missouri; Irwin B. Laughlin, Pennsylvania; Frederic A. Delano, Washington, D. C.; and Dwight W. Morrow, New Jersey.

GENERAL CONSIDERATIONS

The Smithsonian Institution is a private establishment given to the American people by a philanthropic English gentleman for the increase and diffusion of knowledge among men. Out of its private investigations and collections grew up activities of immense public value. They have been the foundation of nine prominent Government bureaus. Of these, seven are still, by direction of Congress, administered by the Smithsonian Institution for the use of the public and for these public bureaus Congressional appropriations are made. These appropriations are strictly limited to these special objects. It was out of investigations made by the Smithsonian Institution, not out of any Government initiative, that these valuable public bureaus, including the Weather Bureau and the Fish Commission, grew up. Similarly, it is logical to suppose that out of the free activities of the Smithsonian Institution great public benefits would arise in future if it had means

appropriate to its position as the national research institution. But in these days of high wages, high salaries, and high prices, the small income from the Smithsonian endowment, $65,000 annually—only as much in a year as the Carnegie Institution has for research in two weeks—is quite insufficient to make any considerable showing.

This is what the Smithsonian Institution does:

1. It carries on original scientific investigations by its own staff.

2. It prints large memoirs and smaller original papers, publishes useful tables and formulas, and reprints informing articles on scientific progress suitable for the intelligent general reader, and distributes these free to scientific and learned societies throughout the world.

3. It answers by mail an average of 8,000 inquiries on scientific subjects annually, gratis.

4. It gives occasional lectures and courses of lectures by eminent scientists.

5. It confers medals of honor on eminent discoverers.

6. It subsidizes, if funds can be secured, approved researches by outside workers.

7. It procures foreign diplomatic and learned recognition and assistance for expeditions going abroad.

8. It fosters scientific development of schools, museums, and institutions throughout the world by cooperation in the loan of research men, in the free distribution of over a million specimens, and in giving its advice and its publications.

9. It is the headquarters of the American Association for the Advancement of Science. Until 1924 it was the headquarters and meeting place of the National Academy of Sciences.

10. It is the official channel of exchange of scientific intelligence between the United States and the world.

11. It contributes continually to the Library of Congress a large flow of foreign periodical and occasional scientific literature, which has now accumulated to over 500,000 volumes.

12. It administers seven public governmental bureaus besides the Freer Gallery.

13. It disburses annually funds from four sources:

(*a*) The income of its endowment, $65,000.

(*b*) Sums intrusted by private individuals for special objects. Average five years—$70,000.

(*c*) The income of the Freer bequest. Average five years—$190,000.

(*d*) Congressional appropriations for seven public bureaus—$850,000.

What the Smithsonian desires to do and be.—The Smithsonian Institution, ward of the American Nation, desires to bring out the hid-

den treasures of knowledge from the great collections under its care; to prosecute vigorously for the ultimate benefit of mankind its researches in astronomy, physics, chemistry, mathematics, geology, meteorology, and the life sciences; to publish amply, both for the specialist and the general reader; to answer generously those who seek its information. The Smithsonian Institution desires to continue worthy of being, as it must forever be, the national institution for the increase and diffusion of knowledge among men. With these objects, it is unfitting that the endowment of the Smithsonian Institution should be inadequate and so far inferior to the endowments of first-rank private institutions having no national status.

In the report for 1925 I called attention to the fact that a substantial addition to the Institution's resources was imperative. The support of the few major researches at present carried on through gifts for specific investigations is becoming more and more precarious and the publications of the Institution are reduced to one-third of their former number. To meet this situation, a direct effort was determined upon to increase the permanent endowment, and one step mentioned last year was an agreement made with the William T. De Van Corporation, of New York, to issue the Smithsonian Scientific Series, a series of illustrated popular science books to be written by members of the staff, describing in attractive form the activities of the Institution and the bureaus under its direction in many branches of science. The method at first proposed of publishing the series was found to be impractical, and toward the close of the past fiscal year a new method was evolved which it is believed will be more successful.

It was further noted in last year's report that another project for increasing the Institution's resources was under consideration but had not been definitely entered into by the close of the year. This project has since taken shape, and in November, 1925, the Board of Regents announced publicly that the Institution would go before the American public to raise an addition of $10,000,000 to its endowment fund. Since that time the officials of the Institution have been engaged in laying the necessary groundwork for such a campaign, and it is expected that the actual raising of money will begin during the coming autumn. The official announcement of the Board of Regents called attention to the totally inadequate present income of the Smithsonian, outlined briefly its past achievements and world-wide reputation, and mentioned the many important projects in the realm of pure science which it was equipped to undertake but had not the means for. The announcement concluded as follows:

Current history proves that nations climb to higher standards of living on the ladder of science. It was Pasteur who claimed that "science is the soul of prosperity of nations and the living source of all progress. What really leads us forward are a few scientific discoveries and their application." It is the recognition of this fact and of the part which the Smithsonian is called upon to play in contributing to the prosperity of the nation which leads the Board of Regents to turn to the people of the country for an addition of $10,000,000 to the Institution's endowment.

A number of major expeditions in the interests of science went out during the year under Smithsonian direction, through funds provided by friends of the Institution for these special projects. There should be mentioned particularly the Smithsonian-Chrysler expedition to East Africa for the purpose of obtaining live wild animals for the National Zoological Park; the National Geographic Society Solar Radiation Expedition Cooperating with the Smithsonian Institution, to equip and maintain for a period of years a solar radiation station in the Eastern Hemisphere to cooperate with the two now operated by the Smithsonian; Dr. Aleš Hrdlička's anthropological expedition to southern Asia, Java, Australia, and South Africa, which covered over 50,000 miles, under the joint auspices of the Institution and the Buffalo Society of Natural Sciences; and the first award of the Smithsonian's Walter Rathbone Bacon Traveling Scholarship, under which Dr. Waldo L. Schmitt, of the National Museum, conducted an extensive survey of the crustacean fauna of South America. All of these expeditions are briefly described elsewhere in this report.

FINANCES

The permanent investments of the Institution consist of the following:

Deposited in the Treasury of the United States	$1,000,000.00

CONSOLIDATED FUND

Miscellaneous securities, etc., either purchased or acquired by gift; cost or value at date acquired	218,186.50
Charles D. and Mary Vaux Walcott research fund, stock (gift); value	11,520.00

The sums invested for each specific fund or securities, etc., acquired by gift are described as follows:

Fund	United States Treasury	Consolidated fund	Walcott research fund	Total
Avery fund	$14,000.00	$34,690.87		$48,690.87
Virginia Purdy Bacon fund		62,272.93		62,272.93
Lucy H. Baird fund		1,528.09		1,528.09
Chamberlain fund		35,000.00		35,000.00
Habel fund	500.00			500.00
Hamilton fund	2,500.00	500.00		3,000.00
Caroline Henry fund		1,223.33		1,223.33
Hodgkins fund:				
General	116,000.00	37,275.00		153,275.00
Specific	100,000.00			100,000.00
Bruce Hughes fund		13,839.90		13,839.90
Morris Loeb fund		3,519.00		3,519.00
Lucy T. and George W. Poore fund	26,670.00	18,536.42		45,206.42
Addison T. Reid fund	11,000.00	7,299.16		18,299.16
Rhees fund	590.00	357.34		947.34
George H. Sanford fund	1,100.00	675.72		1,775.72
Smithson fund	727,640.00	1,468.74		729,108.74
Charles D. and Mary Vaux Walcott research fund			11,520.00	11,520.00
Total	1,000,000.00	218,186.50	11,520.00	1,229,706.50

The Institution gratefully acknowledges gifts from the following donors:

American Association for the Advancement of Science, for botanical explorations in Jamaica.

Mr. Oakes Ames, for botanical explorations in Costa Rica.

Mrs. Laura Welsh Casey, for expenses in connection with Casey collection of Coleoptera.

Mr. Walter Chrysler, for expedition to Africa to collect animals, etc. for the National Zoological Park.

Mr. E. W. Marland, for Missouri Historical Society, for study of the language of the Osage Indians.

National Academy of Sciences, for paleontological researches.

New York Botanical Garden, for botanical explorations in Jamaica.

Mr. John A. Roebling, for solar researches, etc.

Mr. Washington A. Roebling, for purchase of minerals, etc.

Mr. Charles T. Simpson, for work on West Indian shells.

Dr. Frank Springer, for publication of "American Silurian Crinoids."

Mr. B. H. Swales, for purchase of specimens.

University of Pennsylvania, department of botany, for botanical explorations in Jamaica.

The Institution has also received contributions from the following friends for the funds as listed below:

Endowment campaign expense fund: Dr. Charles G. Abbot, Mr. Robert S. Brookings, Mr. Frederic A. Delano, Hon. Andrew W. Mellon, Dr. Charles D. Walcott, and the Hon. Henry White.

Endowment fund: Mr. John Baker, Mr. H. E. Bouwknegt, Miss Elizabeth W. C. Campbell, Mr. J. M. Chadwell, Mr. L. French, Mr. Leo Henle, Mr. Sol. Isler, Mr. William F. Kemble, Mr. D. Kinnear, Mr. George G. Marshall, Mr. Harold M. Mayo, Master Orrin F. Nash, Mr. John H. Powers, Mr. Henry S. Ritter, Dr. Rudolf Ruedemann, Dr. Charles S. Schuchert, Mrs. Eleanor H. Wheelwright, Mr. George McLane Wood, and Mr. F. R. Wulsin.

Smithsonian scientific series: Mr. Wyllys W. Baird, Mrs. Elizabeth B. Blossom, Hope Natural Gas Co., Mr. William W. Laird, Mr. James H. Lockhart, Peoples Natural Gas Co., Philadelphia company and affiliated corporations, and Mr. George M. Reynolds.

The Institution wishes to express its gratitude to Mr. John Poole for his deep interest and help in connection with the endowment fund campaign and also to the following gentlemen who, through him, extended very welcome aid to the same:

Mr. Byron S. Adams, Mr. Thomas P. Bones, Mr. Alexander Britton, Mr. Charles I. Corby, Mr. John Dolph, Mr. T. C. Dulin, Mr. William John Eynon, Mr. W. T. Galliher, Julius Garfinckel & Co., Mr. Fred. S. Gichner, Mr. William F. Ham, Mr. Morton J. Luchs, H. L. Rust Co., Mr. James Sharp, Mr. H. C. Sheridan, and Mr. George E. Walker.

Freer Gallery of Art.—The invested funds of the Freer bequest are classified as follows:

Court and grounds fund	$278,825.50
Court and grounds, maintenance fund	69,683.75
Curator fund	278,825.50
Residuary legacy	2,842,080.19
Sinking fund	350,261.25
Total	3,819,676.19

The practice of depositing on time, in local trust companies and banks, such revenues as may be spared temporarily, has been continued during the past year, and interest on these deposits has amounted to $1,748.21. The income during the year for current expenses, consisting of interest on permanent investments and other miscellaneous sources, amounted to $61,171.52. Revenues and principal of funds for specific purposes, except the Freer bequest, amounted to $166,214.79. Revenues on account of Freer bequest amounted to $255,354.66, amount received from sale of stocks and bonds $988,510, aggregating a total of $1,471,016.97.

The disbursements, described more fully in the annual report of the executive committee, were classed as follows: General objects of the Institution, $60,782.56; for specific purposes (except the Freer bequest), $181,647.45; and expenditures pertaining to the Charles L. Freer bequest, $1,265,884.31. The balance on hand on June 30, 1926, was $134,889.40.

The following appropriations were made by Congress for the Government bureaus under the administrative charge of the Smithsonian Institution for the fiscal year 1926:

International Exchanges	$46,260
American Ethnology	57,160
International Catalogue of Scientific Literature	8,000
Astrophysical Observatory	31,180

Additional assistance secretary		$6,000
National Museum:		
Furniture and fixtures	$21,800	
Heating and lighting	77,560	
Preservation of collections	441,082	
Building repairs	12,000	
Books	1,500	
Postage	450	
		554,392
National Gallery of Art		21,028
National Zoological Park		157,000
Printing and binding		90,000
Total		971,020

RESEARCHES AND EXPLORATIONS

Field expeditions play an important part in the work of a research institution. The Smithsonian, although handicapped particularly in this phase of its work by inadequate income, sends out or participates in many such expeditions each year. It is often found advantageous to cooperate in field work with other institutions, thus dividing the expense and enabling the participating institutions to share the collections and other benefits resulting from the expedition. The Smithsonian's explorations cover biology, anthropology, geology, and astrophysics, and in addition to furnishing important new facts in these sciences, the material brought back by the explorers has done much toward building up the collections of the National Museum and filling in gaps in the scientific study series. During the past year the Institution has engaged in about the usual number of field expeditions. These have conducted scientific exploration or field work in many States of the United States, Canada, Haiti, several regions in South America, Europe, southern Asia, Java, Australia, South Africa, and China. Some of these are described in the reports of the National Museum and the Bureau of American Ethnology, appended hereto, and a few of the others will be mentioned briefly here in order to show the character and diversity of the Institution's field work.

GEOLOGICAL EXPLORATIONS IN THE CANADIAN ROCKIES

Your secretary continued during the 1925 field season his geological field work in the Canadian Rockies, starting from Lake Louise Station in Alberta on July 9 with a pack train bearing the camp outfit. The season was unusually unfavorable, forest-fire smoke interfering with photography and the large number of snow squalls making field work extremely difficult. Regarding the progress of the geological work, I wrote at the close of the season:

eight camps were made while on the trail. It was more through good than favorable conditions that a fine series of fossils from critical s in the great lower Paleozoic section north of Bow Valley was dis- l and collected. These fossils increase our knowledge of the history and the Cordilleran Sea of this time and afford the data for comparison with d conditions in the Appalachian Trough and the great upper Mississippi ment of Upper Cambrian time.

the interval between the snow storms of September 5 and 9 several new zones were found in the Lower Ordovician rocks of the Johnston-Wild er Canyon Pass section, and also in the Upper Cambrian west of Badger . The latter find enabled Doctor Walcott to identify the Arctomys forma- of the Glacier Lake section and to clear up the uncertainty as to the posi- of the strata hitherto referred to the lower portion of the Bosworth nation.

* * * * * * *

This year probably completes the field work in the Canadian Rockies. A few the problems encountered have been cleared up in the past nine years, but ny remain to be studied by young, well-trained men with strong hearts, porous muscles, and the high purpose of the research student seeking to dis- ver the truth regarding the development of the North American Continent nd of the life of the waters in which the miles in thickness of sands, clay, nd limey muds accumulated during a period of several million years of lower Paleozoic time.

Your secretary was engaged at the close of the year, during such times as he was able to spare from administrative duties, in preparing for publication the geological results of many seasons of work in the Canadian Rockies. This summary of the Canadian work will appear as one of his series on Cambrian Geology and Paleontology in the Smithsonian Miscellaneous Collections.

COLLECTING FOSSIL FOOTPRINTS IN ARIZONA

Through a cooperative arrangement with the National Park Service, Mr. C. W. Gilmore, curator of vertebrate paleontology in the National Museum, visited the Grand Canyon during the past field season for the double purpose of preparing a permanent exhibit of fossil footprints in the rock along the Hermit Trail, and of making for the National Museum a collection of these footprints to send back to Washington. Mr. Gilmore succeeded in both of these projects and in his preliminary report on the work, he writes:

A series of slabs, some 1,700 pounds in weight, carrying good examples the various kinds of imprints occurring there, were collected and shipped the Museum. The tracks occur in the Coconino sandstone in Hermit B on the trail down to Hermit Camp, and from 900 to 1,080 feet below the of the canyon. Their excellent preservation and variety of kind, coupled their great antiquity, make this collection of more than usual interest. liminary study of the tracks has demonstrated that they represent not a new Ichnite fauna but probably the best preserved and most extensive of Permian footprints known anywhere in the world.

It was found that the natural conditions were most favorable for the p tion of an exhibit of fossil tracks in situ. The rather steep slope

sandstone on whose surfaces the tracks are impressed stands at an inclination of 30° facing toward the Hermit Trail, over which in the course of the year hundreds of tourists travel on mule back in making their pilgrimage to the bottom of the Grand Canyon. The upper layers of the sandstone cleared off in large sheets, thus uncovering whatever tracks and trails there were to be found beneath. The work of preparing this exhibit consisted, therefore, of removing the overburden of loose dirt and broken rock, then quarrying off the loose upper laminae until a solid and continuous face covered with footprints was reached. This was done, and a smooth surface 8 feet wide and 25 feet long was carefully uncovered.

At the side of the slab leading up from the trail a series of stone steps was laid in order to facilitate examination by those interested in the footprints covering its surface. Although this slab constituted the main exhibit, other large surfaces were similarly uncovered, so that in all there are several hundred square feet of rock surface showing imprints of feet, thus forming a permanent exhibit of the various tracks and trails to be found here.

The great antiquity of these footprints is clearly demonstrated at this locality, for it is evident that since the day when those animals impressed their feet in what at that time was moist sand more than 1,000 feet of rock-making materials were piled up in successive strata above them, and this does not take into account many hundreds of feet more that have been eroded off the present top of the canyon wall.

The great length of time necessary for the cutting away or erosion of the rock to form the deep canyon and the even longer time necessary for the original deposition of this great vertical mass of stone when translated into terms of years, if that were possible, would be so stupendous as to be almost beyond human comprehension.

BIOLOGICAL COLLECTING IN WESTERN CHINA

The collecting of biological material for the National Museum was continued in the Province of Szechwan, western China, by the Rev. David C. Graham. Various trips which he had proposed to take had to be abandoned because of the presence of numerous bandits in certain areas, and his work was greatly handicapped by civil-war conditions in that part of China. Nevertheless, Mr. Graham succeeded in making large collections of valuable biological material for the Museum.

While still undecided as to his summer's plans for collecting, Mr. Graham received notification that all foreigners were requested to go together to Kiating, with a heavy military escort for safety. Regarding his activities after this, a brief account prepared from Mr. Graham's letters reads in part as follows:

The party reached Kiating on July 7, and having gone thus far, Mr. Graham decided to try for Washan Mountain, and had actually started, when on the 12th a messenger arrived with a letter saying conditions were getting worse down the river, that many British subjects were leaving Szechwan, and that all foreigners might be ordered to leave, also advising that he abandon his plan to visit Washan. He notes: "It is a keen disappointment, but it seems unwise to go on, so to-morrow I'll go back toward Mount Omei and spend the summer as profitably as I can." On July 14 he received a letter stating that

conditions were improving and that the foreign community withdrew its request that he should not attempt the trip to Washan. He thereupon again headed for that mountain, and on July 23 reached the summit, which he says is the highest point in central Szechwan. On every side "it is a sheer cliff several thousand feet high, with only one road to the top and back * * * The road made a few circles, and soon I found myself walking along the edge across the top of that cliff, with only a foot or more of dirt and some small bushes between me and the precipice. Later the road leads a long way on the edge of a narrow ridge, on each side a sheer precipice of thousands of feet. In one spot the path is about 3 feet wide, and I think a little less. It took all the grit I had to cross that place, and I'd hate to attempt it in rainy weather when the rocks are slippery. There is one place where there is no place to get a foothold, and the precipice is bridged by poles placed side by side; under the bridge is a chasm that one does not like to look at. To cap the climax, near the top are long ladders. It is practically perpendicular at these points, and without the ladders no one could reach the top."

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In preparing for his return journey, Mr. Graham decided to pack his summer's accumulation of specimens and mail them from the village of Shin Kai Si, to reduce the danger of loss from robbers. Over 70 parcels were packed and mailed from this place, after which he set out for Kiating, where he was to try and arrange for the safe transport of the Suifu foreigners from Kiating to Suifu.

Mr. Graham's return from Kiating to Suifu was filled with exciting incidents, due to war, brigands, and lack of food. He writes: "With over 100,000 troops engaged in civil war in the Province, with bands of robbers everywhere, and with the serious complications between China and the foreign powers, it may be considered a victory to have carried through the collecting trip and to have secured more specimens than were collected in any previous year."

STUDY OF THE CRUSTACEAN FAUNA OF SOUTH AMERICA

During the past year the first award was made of the Walter Rathbone Bacon scholarship of the Smithsonian Institution, created by the will of Virginia Purdy Bacon for the study of the fauna of countries other than the United States. The award was made to Dr. Waldo L. Schmitt, curator of marine invertebrates in the National Museum, for the purpose of undertaking a comprehensive study of the crustaceans of South America. He began work at Rio de Janeiro, Brazil, where museum collections were examined and some preliminary collecting done. The following extract is taken from a preliminary account of his work prepared at the National Museum:

On September 17, accompanied by Doctor Luderwaldt, Doctor Schmitt started for São Sebastiao, arriving the next morning after a most uncomfortable night on a small boat. The collecting here was good and many varieties of crustacea were obtained. Night collecting yielded valuable tow-net hauls. Upon this island several species of fresh-water shrimps were obtained. Doctor Schmitt is of the impression that these shrimps can travel considerable distances overland through the woods should their parent stream go dry. He states that

tiny Euphausids produce a magnificent phosphorescence at night in the waters around the island.

He returned to Santos September 28, where several cases of specimens were prepared for shipment to Washington.

Passing down the coast, collections were made at São Francisco Island, then at Castro where several fresh-water streams were visited. Here, amongst other things, two species of an anomuran crab of the genus *Aegleа* were obtained. These Doctor Schmitt considered a great find, as they are rather rare in collections and there has been some uncertainty as to their status.

He left Castro October 21 and traveled by auto over the mountains to Blumenau. Here he met Fritz Schmitt, son-in-law of Fritz Müller, the celebrated naturalist, visited Müller's former home, and saw the very simple microscopes with which he did such excellent work.

He returned to São Francisco October 27, when several cases of specimens were packed for shipment to Washington. The weather and tides being favorable, some excellent collections of shrimps and amphipods were made at this station, and he says "I've extended the ranges of a number of species, and surely found a couple of new ones here."

He arrived off Itajahy at 8 p. m. November 2, after a cold, rainy trip, and early the next morning anchored off Florianopolis. Some tow-net hauls and shore collecting here produced excellent results.

Owing to the many unavoidable delays, Doctor Schmitt has not been able to progress as rapidly as he had hoped, but the ground has been as thoroughly worked as possible, and several cases of specimens have already been received at the Museum. His collections at this time comprise several thousand specimens and consist chiefly of Crustacea, Coelenterates, Porifera, Echinoderms, Annelids, Bryozoa, and Fishes.

ANTHROPOLOGICAL STUDIES IN SOUTHERN ASIA, JAVA, AUSTRALIA, AND SOUTH AFRICA

The most far-reaching expedition of the year was that undertaken by Dr. Aleš Hrdlička in the interests of physical anthropology, which covered some 50,000 miles through Europe, India, Ceylon, Java, Australia, and South Africa. The primary purpose of the expedition, under the joint auspices of the Smithsonian Institution and the Buffalo Society of Natural Sciences, was to make a thorough survey of the subject of ancient man and fossil apes in these regions.

Doctor Hrdlička's work began in the region of the Siwalik Hills of northern India, which he regards, as the result of his survey, as the richest and most promising region in the world in remains of fossil anthropoid apes. The following extracts from Doctor Hrdlič'k'a first published account of his trip will give an impression of the vast amount of territory covered and of the importance and interest of the work:

From Simla Doctor Hrdlička proceeded to the Tibetan border to observe the types of the Tibetans who made their homes in Darjeeling or its vicinity, or come there from over the mountains, and who occasionally show types that resemble most closely the American Indian. At Darjeeling, with generous help from the Government, it was possible in a short time to see large numbers

f the native population, consisting of mongoloid tribes who have overflowed nto the northernmost parts of India, and a good many Tibetans. There is een amongst these Tibetans, Chinese admixture—for the Chinese have been ords of Tibet for a long time—yet frequently true American Indian types are lso to be found, so true that if they were transplanted into America nobody ould possibly take them for anything but Indian. They—men, women and hildren—resemble the Indians in behavior, in dress, and even in the intonaions of their language.

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From Calcutta the journey led to Madras, where Doctor Hrdlička wished o inspect the collections, and to see what could be learned of traces of the Negrito in the Indian population. One of the biggest problems in anthropology s the presence of the Negrito in the Philippines, the Andamans, and elsewhere in the far southeast. He is there—a clear but enigmatic type, without onnection now in any direction. His nearest relatives are apparently the ygmies of Central Africa, but a great unbridged space has till now separated he two. The problem is, How did the Negrito get to his present homes? If e extended from Africa, he must have left traces of his passing in Arabia nd India, from which, however, there has hitherto come no clear evidence f his presence. Such traces, so far at least as the Indian coast lands are oncerned, Doctor Hrdlička became satisfied do exist. They occur in Parganas northwest of Calcutta), in at least one area along the eastern coast, here and here among the Dravidians, and along larger parts of the western coast, iore especially in the Malabar Hills. This brings unmistakable traces of the Negrito a long way farther to the westward and so much nearer to Africa, aking his derivation from that continent so much the more probable.

A great collection of paleolithic implements is preserved in the museum at Iadras. These implements are similar to those of other parts of India. They re all of one general class, so that there can hardly be a question as to heir contemporary origin in the different parts of India, their connection ith people of the same race, and belonging to the same, though perhaps a ong, cultural period. They do not show great variety. They resemble some f the paleolithic implements of western Europe, but on the whole can not be ssociated with any one of the European cultural periods. In certain parts f India, such as the Santal country north of Calcutta, such implements have een collected in thousands. In other parts, especially near Madras, they re partly on the surface soil, partly from 1 to 4 or 5 feet and even deeper elow the surface. In places they occur in the alluvium of the rivers and ccasionally in the "laterite," a talus-like débris resulting from the disinteration of older rocks.

In short, there are plentiful paleolithic implements over large portions of he country, but as yet they do not definitely indicate a man of geological ntiquity.

With regard to the bulk of the present population of India, Doctor Hrdlička elieves he can say with confidence that it is mainly composed of three ethnic lements—the Mediterranean, the Semitic, and in certain parts the "Hamitic" r North African. The "Aryans" show everywhere either the Semitic or the Mediterranean type. There was seen nothing that could be referred to the ypes of central or northern Europe. It would seem therefore that the Aryans ame from Persia and Asia Minor rather than from or through what is now European Russia.

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The visit to Java was made chiefly for the purpose of inspecting the site of he Pithecanthropus, but Doctor Hrdlička also desired to satisfy himself as

to any possible cultural traces of early man, and as to the present population. As a result of the generous assistance given by the authorities, he was able to see the natives in practically the whole of the island and especially to examine that important region which gave the precious remains of the Pithecanthropus—the valley of the Bengawan or Solo River, a fairly large river, beginning in the south of the island and running north and then east to Surabaya. Here exists a veritable treasure house for anthropology and paleontology where nothing has been done since the Selenka expedition of 1910, which was the only one since the work of Doctor Dubois in 1891–1893. The lower deposits along the river are full of the fossil bones of Tertiary and Quaternary mammals, but among them at any time may be remains of greater value. Many of the fossils fall out of exposed strata every year and lie in the mud, where the natives occasionally gather them and take them to their homes.

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The data obtained in Australia, supplemented by those on the Tasmanian material in the College of Surgeons, London, throw a very interesting and, to some extent, new light on the moot questions of both the Australian and the Tasmanian aborigines. According to these observations, the Australian aborigines deserve truly to be classed as one of the more fundamental races of mankind, and yet it is a race which shows close connections with our own ancestral stock—not with the negroes or Melanesians (except through admixture), but with the old white people of postglacial times. They carry, however, some admixtures of the Melanesian blacks, which is more pronounced in some places than in others.

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The two main objects of the visit to South Africa were the investigation on the spot of the important find of the Rhodesian skull and of the recent discovery of the skull of a fossil anthropoid ape at Taungs, which had been reported as being possibly a direct link in the line of man's ascent.

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The discovery in 1921 at Broken Hill in southern Rhodesia of the skull of the so-called "Rhodesian man" was an event of much scientific importance. The find, moreover, is still enigmatic. The skull shows a man so primitive in many of its features that nothing like it has been seen before. The visit to the Broken Hill mine, in which the skull was discovered, proved a good demonstration of the necessity of a prompt following up by scientific men of each such accidental discovery. The impracticability of such a following up in this case has resulted in a number of errors and uncertainties on important aspects of the case, some of which have already misled students of the finds. It was possible to clear up some of the mooted points, but others remain obscure and can be definitely decided only by further discoveries.

As one of the results of the present visit, it was possible to save and bring for study a collection of bones of animals from the cave, the lower recesses of which gave the Rhodesian skull, and also two additional mineralized human bones belonging to two individuals, all of which, to facilitate the study of the whole subject, were deposited with the earlier relics in the British Museum. The mine is by no means exhausted; and since the interest of everybody on the spot is now fully aroused to these matters, there is hope that more of value may yet be given to science from this locality.

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Doctor Hrdlička has returned deeply impressed with the opportunities for and the need of anthropological research offered by all these distant parts of the world and the openings everywhere for American cooperation. The story

of man's origin, differentiation, spread, and struggle for survival is evidently greater, far greater, than ordinarily conceived, and a vast amount of work remains for its satisfactory solution.

ARCHEOLOGICAL STUDIES IN MISSISSIPPI

Mr. Henry B. Collins, jr., assistant curator of ethnology in the National Museum, was detailed during the summer of 1925 to the Bureau of American Ethnology to conduct an archeological exploration of the region in Mississippi formerly occupied by the Choctaw Indians. In describing the scope of the work, Mr. Collins says:

> The region selected for investigation was the eastern part of the State, the former center of the Choctaw Tribe. Here are found not only the village sites known to have been occupied by the Choctaw within historic times, but also a number of prehistoric mounds similar to those found throughout the Mississippi Valley and in other parts of the South and East, denoting a still earlier occupancy of this region by either the Choctaw themselves or by related tribes.
>
> At the time of first contact with Europeans, the Choctaw were the most numerous of all the southern Indians. They are also generally regarded as a basic type, culturally and physically, of the great Muskhogean linguistic stock. In any consideration of the ethnic problems of the South, therefore, the Choctaw must assume a place of importance, but as yet very little work has been done among them. It was decided, therefore, that operations for the summer should be confined to definitely known Choctaw territory, devoting part of the time to exploration of historic village sites and part to the excavation of prehistoric mounds in an attempt to establish as far as possible the relation of the two.

From Jackson, Miss., Mr. Collins made a thorough reconnaissance of the ancient mounds in some nine counties of the State. The most important mound examined was the famous Nanih Waiya, which is regarded by the Choctaw as the place of their origin. This large, well-preserved earthwork plays an important part in the legendary history of the Choctaw.

The first mounds to be excavated by Mr. Collins were a group of eight near Crandall, in Clarke County. These proved to be burial mounds, and numerous skeletons were found in them, some of them showing evidences of cremation. The next mound opened, near the town of Increase, was of a different type and much larger. Although containing no skeletons and but a few artifacts, the mound proved of unusual interest because of a peculiar stratification encountered. Regarding this stratification and the relationships of the mound, Mr. Collins writes:

> This stratification consisted of a series of brilliantly colored sand layers, yellow, brown, orange, blue-gray, and pure white, from which, at the center of the mound, there suddenly arose a dome-shaped structure of compact yellow clay. This clay dome and the succession of colored sand strata probably had a ceremonial significance, having been placed on the floor of what had very likely been a temple, the site of which was later covered over with a

mound of earth, on the top of which, still later, there probably stood a temple or council house. Colored sand strata in much the same arrangement have also been found in the effigy mounds of Wisconsin.

Within this small inner mound or clay dome was found a rectangular ornament of sheet copper and silver inclosing a core of wood. Both copper and silver are shown by analysis to be native American, probably from the Lake Superior region. Silver and copper ornaments practically identical to this have been found in small numbers in Florida, Tennessee, Ohio, and Michigan.

Thin, flaked knives, struck with a single blow from flint cores, were found both in the mound and in the adjoining field. These are identical in every respect with the flaked knives from Flint Ridge in Ohio which, while abundant in the Ohio mounds, are rarely found in other localities.

With the most significant features of the McRae mound so strongly suggesting northern influence, we must conclude that the builders of this Mississippi mound maintained at least a close trade relationship with the northern tribes. While undoubtedly the many mounds and various other earthworks of North America were built by Indian tribes of diverse stocks, there are certain resemblances between even the most distant of them which suggest a contact something more than sporadic.

Another group of seven small mounds near Hiwannee, Wayne County, proved to be similar in contents and construction to the burial mounds near Crandall. Upon completing their study, Mr. Collins examined the cemetery of the historic Choctaw village of Coosha. near Lockhart, Lauderdale County. This was found to be comparatively recent, dating probably from the first 30 years of the nineteenth century, and the burials indicated that the Choctaw had by then lost most of their native culture and adopted the ways of the whites.

Mr. Collins concluded his season's work with a series of measurements and observations on 58 adult Choctaw living at Philadelphia. Miss.

SMITHSONIAN RADIO TALKS

The Institution continued to make use of radio broadcasting as an effective means of carrying out its purpose—the increase and diffusion of knowledge. The Smithsonian talks on scientific subjects continued to increase in popularity as indicated by the interest shown in them by magazine editors, news writers, and others. The talks were given on a regular weekly schedule from Station WRC, of the Radio Corporation of America, Washington, D. C., beginning October 1, 1925, and continuing until May 20, 1926. Thirty-two talks were given in all, of which 14 were presented by members of the staff of the Institution and its branches, and the other 18 by representatives of the Department of the Interior, the Department of Agriculture, the Department of Commerce, and Harvard College Observatory, speaking under the auspices of the Institution. Through the cooperation of Prof. J. McKeen Cattell, many of the talks have been published with illustrations in the Scientific Monthly.

Through a system of exchanges, seven of the Smithsonian talks were sent to Station WBZ, of Springfield, Mass., for rebroadcasting there under the auspices of a series similar to that of the Smithsonian, and certain of the talks from the New England series, which is under the direction of Dr. Edward Wigglesworth, were rebroadcast in Washington. A number of talks on astronomy, given from Station WEEI, Boston, under the auspices of the Harvard College Observatory, were also rebroadcast from Washington as part of the Smithsonian series, through the courtesy of Prof. Harlow Shapley and Station WEEI.

A second series of talks of a somewhat different nature, entitled "Radio Nature Talks from the National Zoological Park," was inaugurated during the year. This series is described in detail in the report on the National Zoological Park, which forms Appendix 6 of this report. The direction of both of these series under the auspices of the Institution was in the hands of Mr. Austin H. Clark, curator of echinoderms in the National Museum.

A list of the talks in the regular Smithsonian series follows:

August 5, 1925: Butterflies. Mr. Austin H. Clark, National Museum (given from Station WBZ).

October 1, 1925: Flies. Dr. J. M. Aldrich, National Museum.

October 8, 1925. Our Lighthouse Service. Hon. George R. Putnam, Director of Lighthouses.

October 15, 1925: Plant Lice and Scale Insects. Mr. Harold Morrison, Bureau of Entomology.

October 22, 1925: Earthquakes, Commander N. H. Heck, Coast and Geodetic Survey.

October 29, 1925: Our Alaskan Fisheries. Hon. Henry O'Malley, Commissioner of Fisheries.

November 5, 1925: The Work of the Bureau of Standards. Dr. George K. Burgess, director, Bureau of Standards.

November 12, 1925: Turtles. Miss Doris M. Cochran, National Museum.

November 19, 1925: Studying the Sun in Chile. Mr. L. B. Aldrich, Astrophysical Observatory.

November 26, 1925: Comets. Prof. Edward S. King, Harvard College Observatory (read by Mr. Austin H. Clark).

December 3, 1925: The Ups and Downs of the Earth. Maj. William Bowie, Coast and Geodetic Survey.

December 10, 1925: The Story of Time Keeping. Mr. Carl W. Mitman, National Museum.

December 17, 1925: The Numbers, Motions, and Sizes of the Stars. Dr. William J. Luyten, Harvard College Observatory (read by Mr. Austin H. Clark).

December 24, 1925: How the Insects Spend the Winter. Mr. S. A. Rohwer, Bureau of Entomology.

January 7, 1926: How Men Learned to Fly. Mr. Paul E. Garber, National Museum.

January 14, 1926: New Stars and Variables. Dr. Annie J. Cannon, Harvard College Observatory (read by Mr. Austin H. Clark).

January 21, 1926: The American Sword. Mr. T. T. Belote, National Museum.

January 28, 1926: Measuring the Universe. Prof. Harlow Shapley, director, Harvard College Observatory (read by Mr. William M. Sweets).

February 11, 1926: Archeology in the Southern States. Mr. Henry B. Collins, jr., National Museum.

February 18, 1926: Our Ancient Seas. Dr. Charles E. Resser, National Museum.

February 25, 1926: Some Aspects of the Development of Printing. Mr. R. P. Tolman, National Museum.

March 4, 1926: Birds from the Rocks. Mr. Charles W. Gilmore, National Museum.

March 11, 1926: Household Pests. Dr. E. A. Back, Bureau of Entomology.

March 25, 1926: Some Aspects of Northwest Coast Indian Art. Mr. Herbert W. Krieger, National Museum.

April 1, 1926: Bug versus Bug. Mr. R. A. Cushman, Bureau of Entomology.

April 8, 1926: Eclipses. Mr. Leon Campbell, Harvard College Observatory (read by Mr. Austin H. Clark).

April 15, 1926: Spring Flowers. Dr. Edgar T. Wherry, Bureau of Chemistry.

April 22, 1926: What Are the Stars? Prof. Harlow Shapley, director, Harvard College Observatory (read by Mr. Austin H. Clark).

April 29, 1926: How Fossils got into the Rocks. Dr. Wendell P. Woodring, Geological Survey.

May 6, 1926: Spiders. Mr. Clarence R. Shoemaker, National Museum.

May 13, 1926: Crabs, Lobsters, and Their Relatives. Dr. Waldo L. Schmitt, National Museum.

May 20, 1926: Bright Stars and Constellations. Dr. William J. Luyten, Harvard College Observatory (read by Mr. Austin H. Clark).

SMITHSONIAN EXHIBIT AT THE SESQUI-CENTENNIAL

Since 1855 the Smithsonian Institution has taken advantage of nearly every prominent exposition to be held in this country and many abroad to advance, through its carefully planned exhibits, the increase and diffusion of knowledge. The Institution has taken part in 33 expositions, and in addition to thus reaching millions of people through its scientific exhibits, there has resulted the further advantage of bringing to the National Museum a large amount of exhibition material at the close of certain of these expositions. In fact, the Museum received its greatest stimulus when it was still in the formative stage, as a result of the Centennial Exposition in 1876, from which over 40 carloads of valuable material were received as gifts from foreign governments and other exhibitors.

With the funds available for the purpose, the Institution has endeavored at the Sesqui-Centennial Exposition in Philadelphia to represent in its exhibit as many as possible of the varied scientific activities under its direction. In anthropology, biology, geology, and arts and industries, the exhibits are taken from the National Museum. Anthropology exhibits include nine models in miniature of Indian village groups—Iroquois, Sioux, Pawnee, Wichita, Chippewa, Seminole, Navaho, and Pujunan. A particularly educational exhibit portrays the evolution from simple beginnings to

modern form of objects of household use, such as the lamp, the cup, knife, fork and spoon, the hammer, saw, and drill, and the ax. The arts and crafts of the American Indian are represented by life-size models of Zuñi potters, Navaho silversmiths, and Navaho blanket weavers at work at their tasks. The work in biology is typified by a mounted group of the interesting Bighorn, or Rocky Mountain sheep, shown in life-like poses, which has proved to be a most attractive exhibit. Both educational and interesting are the geological exhibits, which include a series illustrating how rock is weathered to form soil; the gems and precious stones which occur in America and the minerals in which they are found; a number of interesting fossil forms such as fossil turtles, a giant fossil fish which had swallowed another fish, both being preserved in the rock, fossil plants from the coal measures of Pennsylvania, and fossil algae or seaweed, among the earliest known forms of life on the earth.

The vast collection of American historical material in the National Museum is represented in the Institution's Sesqui-Centennial exhibit by a selected series of arms, insignia, uniforms, medals, and decorations, and by models of Columbus' ships, of the *Mayflower*, and of the Constitution. Mechanical technology is represented by a very complete exhibit showing the development of the steam engine and of the steamboat. The progress in photography is illustrated by examples of this art from the days of the first daguerreotype to the finest modern work, and this graphic arts exhibit also includes examples of etching, intaglio engraving, the half-tone process, and other methods of artistic expression and reproduction.

The Insitution's work in astrophysics, especially on the study of the variation of the sun's heat, is represented by the instruments used in this investigation—the bolometer, an instrument so sensitive that it will measure a change in temperature of one-millionth of a degree centigrade; the pyrheliometer, which measures the heat received on the earth from the sun; and the pyranometer and the melikeron, devices which permit the determination of the heat lost in passing through the earth's atmosphere.

The Smithsonian exhibit contains also a complete set of its publications and those of the bureaus under its direction, numbering in all nearly 900 volumes, which illustrate one of the Institution's principal means of diffusing knowledge. The entire exhibit was brought together and arranged in Philadelphia under the direction of Mr. W. de C. Ravenel, administrative assistant to the Secretary.

PUBLICATIONS

The 11 series of publications issued under the direction of the Institution form its chief means of accomplishing "the diffusion

of knowledge among men," one of its primary functions. These publications, all on scientific subjects with the exception of the catalogues of the National Gallery of Art, are distributed for the most part free to libraries, learned societies and institutions, and specialists throughout the world. For the general reader interested in keeping up with the march of scientific progress, the Institution presents in the Smithsonian Annual Reports a series of carefully selected articles, some specially prepared, some reprinted, covering as far as possible recent advances and interesting developments in all branches of science.

During the past year 88 volumes and pamphlets have been published by the Institution and the Government bureaus unders its administrative charge. There were distributed 168,932 publications, which included 96,804 volumes and separates of the National Museum series, 35,671 volumes and separates of the Smithsonian Annual Reports, 20,222 volumes and separates of the Smithsonian Miscellaneous Collections, 12,993 publications of the Bureau of American Ethnology, and smaller numbers of the various other series.

Among the eight papers to appear in the Smithsonian Miscellaneous Collections there may be mentioned as of special interest one entitled " An introduction to the morphology and classification of the foraminifera," by Joseph A. Cushman, which has proved of great value to petroleum geologists; " Fossil footprints from the Grand Canyon," by Charles W. Gilmore, describing a large and valuable series of fossil tracks of extinct creatures collected for the National Museum by Mr. Gilmore; and " Music of the Tule Indians of Panama," by Frances Densmore, a paper which describes for the first time the songs and instrumental music of the so-called " white Indians " of the Isthmus of Darien, Panama.

Allotments for printing.—The congressional allotments for the printing of the Smithsonian report to Congress and the various publications of the Government bureaus under the administration of the Institution were practically used up at the close of the year. The appropriation for the coming year ending June 30, 1927, totals $90,000, allotted as follows:

Annual Report to the Congress of the Board of Regents of the Smithsonian Institution	$12,500
National Museum	42,500
Bureau of American Ethnology	25,600
National Gallery of Art	1,200
International Exchanges	300
International Catalogue of Scientific Literature	100
National Zoological Park	300
Astrophysical Observatory	500
Annual Report of the American Historical Association	7,000

Committee on printing and publication.—All manuscripts submitted to the Institution for publication, both papers by members of the staff and those by outside authors, are referred for consideration and recommendation to the Smithsonian advisory committee on printing and publication. The committee also considers matters of publication policy. During the past year seven meetings were held and 96 manuscripts were considered and acted upon. The membership of the committee is as follows: Dr. Leonhard Stejneger, head curator of biology, National Museum, chairman; Dr. George P. Merrill, head curator of geology, National Museum; Dr. J. Walter Fewkes, chief, Bureau of American Ethnology; Dr. William M. Mann, director, National Zoological Park; Mr. W. P. True, editor of the Institution, secretary; Dr. Marcus Benjamin, editor of the National Museum; and Mr. Stanley Searles, editor of the Bureau of American Ethnology.

LIBRARY

The most important change in personnel was the appointment of Miss Isabel L. Towner to the position of assistant librarian in the National Museum to fill the vacancy caused by the retirement and subsequent death of Mr. Newton P. Scudder. Mr. R. Webb Noyes succeeded Miss Sara Young as junior librarian. The death is regretfully recorded of Mr. Francis H. Parsons, for 25 years assistant in charge of the Smithsonian Division of the Library of Congress.

The growth of the Smithsonian library is due almost entirely to the exchange of publications of the Institution for those of learned societies and institutions throughout the world. During the year, 30,541 packages of publications came to the library direct by mail, and 7,352 through the International Exchange Service of the Institution. The accessions of all publications totaled 10,125, which brings the estimate of the number of volumes, pamphlets, and charts in the Smithsonian library to 677,483, to say nothing of the many thousands of parts of volumes awaiting completion of the volumes.

The sets of publications of learned societies in the Museum library were gone over and the missing numbers listed. It was found that many of these could be supplied from the duplicates in the Library of Congress, and an effort is being made to obtain the rest from other sources. The shelves of the main collection in the Museum library were arranged, a task that had not been done for years. An intensive effort was made to bring the filing of the Concilium bibliographicum cards up to date, and much progress was made. Nearly 1,800 volumes were prepared for binding during the year.

NATIONAL MUSEUM

During the past year the total appropriations received for the maintenance of the National Museum was $598,392, an increase of $13,600 over the previous year. This additional amount was applied to the increase of salaries, mostly through reallocation of positions by the Personnel Classification Board, for the employment of special watchmen to allow the opening of the Arts and Industries Building on Sundays, and to the fund for printing and binding. The Museum was benefited by these increases, but they are only a small part of those needed. As pointed out in last year's report, much more generous appropriations are needed to enable the Museum to properly reward efficient service by its employees and to maintain the collections at their greatest usefulness to the ever-increasing public that they serve. It is also most important that representation of many natural forms that are rapidly disappearing under the spread of civilization should be secured for the benefit of future generations.

In the series of Smithsonian radio talks, now an established feature of the winter program of Station WRC, the Museum contributed 12 speakers. Many of the talks have been published in the Scientific Monthly through the interest of its editor, Dr. J. McKeen Cattell.

The total number of specimens added to the Museum collections during the year was 254,032, and more than 1,000 lots of material were received for examination and report. Three thousand eight hundred and fifty-seven objects were given to schools and other educational agencies and 37,682 specimens exchanged for other material, while many thousands of specimens were loaned to specialists for study.

A detailed account of the accessions in all departments of the Museum is given in the Report of Assistant Secretary Wetmore, Appendix 1, but a few of the more noteworthy may be mentioned here.

In the department of anthropology, the division of ethnology received an excellent series of ethnological and cult material from the Rev. D. C. Graham as a result of his explorations for the Smithsonian Institution in western China and eastern Tibet, and a collection of 105 artifacts obtained in Young's Canyon, Ariz., by J. C. Young, transferred by the Bureau of American Ethnology. The division of physical anthropology received valuable skeletal material of Australian aboriginals by exchange with the Adelaide Museum and through personal collection by Doctor Hrdlička.

In the department of biology, the division of insects was greatly enriched by the purchase, with private funds raised by Dr. William

Schaus, of the Dognin collection of lepidoptera, which adds about 32,000 specimens, including 3,000 types, to the collection. The division of marine invertebrates received large additions through the collections of Dr. W. L. Schmitt in South America, and also benefited through the transfer from the Bureau of Fisheries of further material taken on the *Albatross* expedition of 1911 to Lower California, which included many new crustaceans as well as birds and fishes. The division of birds was presented, through Dr. W. L. Abbott, with a valuable collection of birds made in Siam and the Mentawi Islands west of Sumatra by C. Boden Kloss, and through Mr. B. H. Swales and Dr. Casey A. Wood with 65 bird skins of genera and forms not previously represented in the collections.

In the department of geology, the accessions have included very choice and much-needed materials. The outstanding contribution to the division of geology was a collection of approximately 5,000 specimens of ores of rarer metals, assembled by Mr. Frank L. Hess and received by transfer from the United States Geological Survey. The late Col. W. A. Roebling continued his generous contributions to the mineral collections, and other important additions were presented by the United States Mint at Philadelphia, Mr. Jack Hyland, and the Government of British Guiana through Sir John Harrison. Of greatest interest for exhibition purposes was a large group of fluorite crystals presented by the Benson Fluorspar Co., of Cave-in-Rock, Ill., and thought to be the most unusual yet brought to public attention in America. The division of stratigraphic paleontology was enriched through the field explorations of its staff, which added invertebrate fossils from England, Canada, and Europe, as well as the United States. In continuation of his work of last year, Mr. C. W. Gilmore added a new series of shale and sandstone slabs containing the tracks of extinct animals to the collections of vertebrate fossils. Fossil mammal material of unusual value was collected in Florida by Dr. J. W. Gidley.

The accessions in the department of arts and industries showed an increase over last year. In the section of mineral and mechanical technology, the outstanding accession was the airplane *Chicago*, the flagplane of the world flight of 1924, which was transferred to the Museum by the War Department. The textile collections were enriched by the addition of many new fabrics. Several models were installed illustrating the production of certain industrial articles, such as methyl alcohol, coke, casein, and condensed milk. Examples of etching, wood-engraving, lithograph, and other forms of graphic expression have been received by the division of graphic arts. The section of photography has received a valuable set of machines and material illustrative of the growth of the motion-picture industry.

The Loeb collection of chemical types was increased by 165 specimens, and the historical collection by 17,256 specimens.

A number of field expeditions were participated in during the year by members of the Museum staff cooperating with private organizations or with other governmental agencies. The bulk of the accessions to the collections was derived from these activities, which are described in Appendix 1. The lecture rooms and auditorium of the National Museum were used for 110 meetings covering a wide range of activities. Visitors to the Smithsonian Building totaled 110,975; to the Arts and Industries Building, 355,762; to the Natural History Building, 581,563; and to the Aircraft Building, 58,005. The Museum published 8 volumes and 49 separate papers during the year and distributed 96,804 copies of its publications.

NATIONAL GALLERY OF ART

Attention is again called in the director's report to the urgent need of a separate building for the National Gallery, the estimated cost of which would be $8,000,000. Without such a building, and with the art works now belonging to the gallery crowded into temporary quarters in the National Museum, there has been a marked decrease in gifts and bequests to the gallery in recent years. With a suitable building, not only would the people of America again begin to add their art treasures to the national collection in Washington, but the collections of graphic arts, ceramics, textiles, and American history, now exhibited in scattered places in the National Museum, could be shown in association with the paintings and sculpture, thereby releasing many thousand feet of floor space needed for the natural sciences.

The National Gallery Commission held its fifth annual meeting on December 8, 1925. The various affairs of the gallery were considered, and attention was given to the year's accessions, to the purchases made through the Ranger fund, to the proposed National Portrait Gallery, and to the method to be followed in considering the acceptance of art works given or bequeathed to the gallery. The present officers and members of committees were reelected for the ensuing year. The marble statue, the "Libyan Sibyl," by William Wetmore Story, and a marine painting, "The Sea," by Edward Moran, were accepted by the commission as permanent additions to the gallery collections.

A very generous offer was made to Congress by Mrs. John B. Henderson during the year, of a large tract of land on Sixteenth Street for a national gallery building site.

Special exhibitions held in the gallery included a loan exhibition of early American portraits, miniatures, and silver; an exhibition

of portrait busts in marble and bronze, by Moses Wainer Dykaar; and an important assemblage of modern Italian art collected and exhibited under the patronage of His Majesty, the King of Italy.

Eight paintings were purchased and assigned to various institutions during the year from the fund provided by the Henry Ward Ranger bequest. It will be recalled that any of these paintings may be reclaimed by the National Gallery of Art during the five-year period beginning 10 years after the death of the artist represented.

Accessions of art works during the year, subject to the approval of the advisory committee of the gallery commission, were 10 paintings to be known as the George Buchanan Coale Collection, 1819–1887; a portrait of Rear Admiral Robley D. Evans, United States Navy; two portrait busts by Moses W. Dykaar; and three paintings by Edward Moran. A number of art works were accepted as loans during the year, and several previously accepted were withdrawn. Nineteen paintings belonging to the gallery were loaned for exhibition by other institutions.

The gallery's library has increased to over 1,400 volumes and pamphlets. A second number of the gallery's catalogues of collections was issued during the year.

FREER GALLERY OF ART

The year's work in the preservation of the collection included work on 10 American oil paintings and the reconditioning of the ceiling of the Peacock Room, half of the latter work being completed at the close of the year. The study of a considerable number of Japanese paintings, including classification and the translation of signatures, seals, and inscriptions upon them, was accomplished during the year. The collection of Near Eastern pottery also was intensively studied and considerably revised.

The library was increased by 500 volumes, of which 462 are in the Chinese and Japanese languages, 72 periodicals, and 142 pamphlets. There has been an increasing demand for photographs of objects in the collection, and 518 subjects are now available for purchase at cost. Over 1,400 photographs were sold during the year. Several hundred copies each of the three publications issued by the gallery—the descriptive pamphlet, gallery books, and the Synopsis of History—were also sold.

The total attendance at the gallery for the year was 108,310. Of this number, several hundred came for special purposes such as to examine objects not on exhibition, and to make copies or photographs of objects in the collections, and six groups varying in number from 20 to 148 made appointments for special study or instruction regarding the collections.

The work of the gallery's archeological expedition in China was practically at a standstill during the year because of the disturbed conditions in that country.

BUREAU OF AMERICAN ETHNOLOGY

The bureau has continued to conduct ethnological researches among the American Indians and to excavate and preserve ruins of prehistoric Indian structures, in accordance with the act of Congress authorizing the work. Dr. J. Walter Fewkes, chief of the bureau, selected as a promising region for study that part of Arizona west of the Little Colorado River, an area practically unknown archeologically. After a brief reconnaissance of the region, Doctor Fewkes chose for excavation a large mound near Flagstaff, Ariz., which revealed an ancient rectangular building 145 by 125 feet in size, containing nearly 40 rooms and a large kiva, or ceremonial chamber. Besides clearing and repairing the walls in order to make this interesting ruin available to tourists and to students of archeology, Doctor Fewkes unearthed and brought back to Washington a large collection of characteristic pottery of diversified form and color, and a number of skeletons of the former inhabitants. As a result of this work, it will be possible to draw conclusions regarding the culture and relationships of the ancient dwellers in this little-known region.

Mr. J. N. B. Hewitt was occupied during the first part of the year in transliterating, amending, and translating the Chippewa text of "The Myth of the Daymaker." Later he undertook the task of reclassifying and recataloguing the valuable collection of linguistic and historical ethnological manuscripts in the bureau archives.

Dr. John R. Swanton completed his papers on the "Social Organization and Social Usages of the Indians of the Creek Confederacy," "Religious Beliefs and Medical Practices of the Creek Indians," and "The Culture of the Southeast," and these works are now in course of publication. He completed the editing of a paper on the "Trails of the Southeast," by the late William E. Myer. Doctor Swanton continued his work in compiling a card catalogue of the words of the Timucua language, and also his investigations on the aboriginal trail system of North America.

Dr. Truman Michelson conducted researches among the Algonquian Indians of Iowa, studying especially the festivals of the Thunder and Bear gentes of the Fox Indians. He later carried on linguistic investigations among the Ojibwa, Ottawa, and Potawatomi. In Washington, Doctor Michelson prepared for publication two papers on sacred packs of the Fox Indians.

Mr. J. P. Harrington was occupied during the year in rescuing all that could be learned of the vanishing culture of the Mission

of California. Extensive excavations were made at several illage sites which revealed two distinct coast Indian cul- ı earlier and a later. Under the direction of one of the few ; who still knows how to make the Mission Indian houses, or r. Harrington succeeded in building one of these structures llent photographs were obtained showing each step in the ion. A large amount of valuable information regarding ion Indians was brought together by Mr. Harrington, and erial will later be published by the bureau.

ancis La Flesche was engaged during the year in classifying onal names of the full-blood members of the Osage Tribe g to their places in the gentes of the tribe. Each name yptically to the origin story of the gens to which it belongs. ,000 names were recorded, but their translation has not been d. Doctor La Flesche, in collaboration with Doctor Swan- n a vocabulary of the Osage Tribe, some 3,000 words having orded with translations thus far.

Frances Densmore continued her studies of Indian music, g during the year extensive material among the Menominee onsin, and completing her manuscript on Papago music, ; now in shape for publication. Mr. Gerard Fowke con- or the bureau during the period February to April, 1926, a nd exploration of a group of aboriginal remains near Marks- . The mounds excavated and the methods of burial dis- ifferentiate this group of remains from any other known to au. Mr. Fowke submitted to the chief a full report, with ions and map, on the work.

g the last three months of the year, Mr. H. W. Krieger of the . Museum was detailed to the bureau for the purpose of ; the archeology of the Upper Columbia River Valley, and to te the restoration of the old Haida Indian village, Old a national monument in southeastern Alaska. A reconnais- p along the upper Columbia River in Oregon and Washing- lted in the selection of an old Indian camp site at Wahluke s the most promising station for excavation. Several hun- jects were unearthed, most of which had been ceremonial ; accompanying the cremation form of burial. At Kasaan, ound that most of the fine totem poles and all of the houses old village had either decayed beyond recall or had been in a recent fire. A few poles were scraped and the rotted moved. On the return trip, Mr. Krieger completed a map of gical sites on the upper Columbia River, and undertook on at eight stations along the river.

Henry B. Collins, jr., of the National Museum, was detailed to eau to carry on archeological work in Louisiana and Mis-

sissippi, particular attention being given to 21 mounds on Pecan Island in Vermilion Parish, from which considerable cultural material and a number of skulls were obtained. Mr. Collins then located the sites of several historic Choctaw villages in eastern Mississippi, and secured physical measurements on 72 living Choctaw.

Dr. J. W. Gidley conducted for the bureau an exploration of the fossil beds near Melbourne and Vero, Fla. Many fossil bones were collected, including some new forms, and a number of Indian mounds were visited and examined.

Dr. Aleš Hrdlička was sent to Alaska for the purpose of studying the archeology of Seward Peninsula, in the vicinity of Nome, but this part of his work did not begin until the close of the fiscal year and the results will be reported on next year.

The bureau issued one publication during the year—the Fortieth Annual Report, containing a number of papers on the Fox Indians by Dr. Truman Michelson—and a number of publications were in press or in preparation at the close of the year. There were distributed 12,993 copies of bureau publications.

INTERNATIONAL EXCHANGES

The number of packages of governmental, scientific, and literary publications handled by the International Exchange Service during the fiscal year 1926 was 480,776, an increase of more than 12,000 over the preceding year. These packages reached a total weight of 558,493 pounds, representing more than 10 per cent increase in weight over last year. Over 2,500 boxes were required for the shipment of publications to foreign exchange agencies for distribution abroad.

The depository of United States governmental documents in China has been changed from the American-Chinese Publication Exchange Department in Shanghai to the Metropolitan Library in Peking. Iceland and the Dominican Republic have been added during the year to the list of depositories of partial sets of our governmental documents. Steps were taken by the exchange service, at the request of several depositories, to have the regular series of governmental documents delivered more promptly than has been customary, and several letters of appreciation of this action were received from abroad by the Smithsonian Institution. Sets of United States official documents are now sent to 101 foreign depositories, and 75 copies of the Congressional Record are exchanged for similar proceedings of foreign parliaments.

In the report on the exchange service, appended hereto, is reproduced a circular describing the service and presenting the rules under which packages are received for distribution.

NATIONAL ZOOLOGICAL PARK

Although the number of animals in the park remains practically he same as in the previous year, the value of the collection has lecreased somewhat through the loss of a number of the larger nammals which are expensive and therefore difficult to replace. Among the 150 animals presented to the park may be mentioned ix specimens of the rhea, the ostrich of South America; a very nteresting collection of birds and snakes from Sumatra; a three-oed sloth; an ocelot; a fine pair of Canada lynx; a Tasmanian walla-by; and four giant salamanders. One hundred and one mammals, birds and reptiles were born or hatched in the park during the year. The mammals included Rocky Mountain sheep, mouflon, Alpine ibex, American bison, Indian buffalo, yak, guanaco, various deer, Javan and Japanese monkeys, raccoon, rock kangaroo, and beaver. The animals lost by death included a number that had been in the park for long periods, the longest record being that of a sloth bear, which had lived in the park for 21 years and 6 months. The total number of animals at the close of the year was 1,619, including 461 mammals, 1,042 birds, and 116 reptiles and batrachians.

The number of visitors for the year was 2,512,900, slightly less than the year before, but more than in any previous year. Schools and classes visiting the park numbered 309, comprising 24,309 ndividuals. General improvements included grading along the new western boundary of the park near Cathedral Avenue, a large amount of needed repairing to roofs, rebuilding the roadway to and around the administration building, and putting in a new drainage system for the cages and walks on the south side of the lion house.

It is gratifying to report that provision is made in the appropriation for the coming year for a bird house, for which there has been urgent need for several years. It is planned to begin construction in the spring of 1927. This structure will enable the officials of the park to assemble a collection of birds worthy of the National Zoological Park. Funds were made available during the past year for furnishing uniforms to the park policemen, making possible the maintenance of a better standard of personal appearance. Similar provision should also be made for the keepers, who are brought to a considerable extent into contact with the public.

In connection with the Smithsonian series of radio talks, a new series was begun during the year entitled "Radio Nature Talks from the National Zoological Park." In this series, thirty-one 15-minute talks were given through station WRC, each preceded by a brief statement of current news of the park.

Through the interest and financial support of Mr. Walter P. Chrysler, automobile manufacturer, an expedition was sent to Tan-

ganyika Territory, East Africa, to secure for the park certain large and important African animals needed for the collection. This Smithsonian-Chrysler expedition left New York March 20, headed by Dr. W. M. Mann, director of the park, and at the close of the year a report was received of the capture of the first animals in the field by the expedition.

ASTROPHYSICAL OBSERVATORY

A grant of $55,000 to Doctor Abbot was made during the year by the National Geographic Society for the purposes of selecting the best site in the Eastern Hemisphere and of establishing and maintaining for about four years a third solar-observing station to cooperate with the two now operated by the Astrophysical Observatory for the measurement of solar variation. To select the best site for the new station, Doctor Abbot visited and examined promising localities in Algeria, Egypt, Baluchistan, and South West Africa, finally giving preference to Brukkaros Mountain in South West Africa. Although extremely isolated, this mountain is otherwise most promising for the investigation. Two-thirds of the 3½-inch average annual rainfall occurs in February and March, when better conditions prevail at the two American stations, and good months may be expected at Brukkaros Mountain when observing weather is poorest in America. Work was begun in April on the construction of the observing tunnel, dwelling, shop, reservoir, and garage, and the expedition is expected to leave this country in the autumn. The station will be manned by Mr. W. H. Hoover, director, and Mr. F. A. Greeley, assistant.

Through the continued generosity of Mr. John A. Roebling, the station maintained for five years on Mount Harqua Hala, Ariz., was transferred to Table Mountain, Calif., in order to obtain better sky conditions. Mr. A. F. Moore, director of the Harqua Hala station, designed and superintended all of the construction of the new station, and regular observations were begun from Table Mountain in October, 1925. The high quality of the observing conditions has amply justified making the change.

Mr. Roebling felt in 1924 that his part in supporting the solar radiation work should end with June 30, 1925. Letters were addressed to the National Academy of Sciences, the Chief of the Weather Bureau, and the director of the meteorological office of the Air Ministry of Great Britain, asking whether in their opinion the importance of the solar observations warranted asking for increased Government appropriations to cover the support of the Montezuma station. The replies were emphatic in stating that the work was of the highest value and importance, and Congress granted the necessary increase to continue the Chilean station.

The daily solar constant values have been cabled to Washington from the Montezuma station as heretofore, and since January 1, 1926, the solar constant data have been published on the daily weather map at the request of the Chief of the Weather Bureau. On that date, the Institution made public announcement that it would furnish "through the United States Weather Bureau, through either of the telegraph companies, or through the Associated Press, or Science Service, if any or all of these organizations shall request it for the use of their clients, daily or 10-day mean values of the solar constant of radiation as early and as frequently as results are available from its field stations in Chile and California."

The staff of the observatory at Washington have been largely occupied during the year with a complete revision of all of the Mount Montezuma data. As a result of this extensive work, the newly derived solar constant values show a new and higher order of accuracy than ever reached before.

A new proof of solar variability was devised by Doctor Abbot, on the basis that if the atmosphere had uniform temperature, transparency, and humidity, and if the pyrheliometer observations were made always at the same altitude above the horizon, the readings of the pyrheliometer would be directly proportional to the intensity of the solar rays. Testing this idea on all observations made in the months of July at Mount Wilson, from 1910 to 1920, excluding the years 1912 and 1913 as well as many individual days of unusual atmospheric conditions, Doctor Abbot plotted a full curve from the remaining observations. Then using the identical days, the mean solar constant values as heretofore published were plotted as a dotted curve. Both curves agree very closely except in 1914, when they differ by about 1 per cent. Both curves indicate a range of solar variation in July of 1910 to 1920 of over 2 per cent. With them was plotted in a double line the variation of sun-spot numbers. Even in details the agreement is quite remarkable.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

Attention is again called to the urgent need of financial support to enable the organization to resume publication. The United States is the only country sufficiently prosperous to furnish this support, and no bibliographic enterprise more worthy of assistance could be found than this great international cooperative undertaking which for so many years was the only complete bibliographic aid to students and investigators in all branches of science. More than ever before, commercial enterprises depend on scientific work, and as it is through the literature of science that all such work is announced and recorded, every effort should be made to have these records exact, com-

plete, and available. It was this field that was covered by the International Catalogue.

NECROLOGY

GEORGE GRAY

Judge George Gray, member of the Board of Regents of the Institution for over 30 years and chairman of its executive committee for the past 10 years, died on August 7, 1925. Judge Gray was born at New Castle, Del., on May 4, 1840, and graduated from Princeton University in 1859. He studied law at Harvard and was admitted to the bar in 1863. After practicing for 16 years, he was appointed attorney general of Delaware in 1876. This office he held for six years, when he was elected United States Senator for the unexpired term (1885–1887) of Thomas F. Bayard, who had been appointed Secretary of State. Judge Gray was twice reelected to the Senate, and at the end of these two terms, he was made United States circuit judge, third judicial circuit, which office he held from 1899 to 1914. From this time until his death, Judge Gray was a member of a number of important peace commissions and international arbitration commissions. For several years preceding his death he had served as a trustee and vice president of the Carnegie Endowment for International Peace.

Through his long period of service on the Board of Regents and as chairman of the executive committee, Judge Gray had a real interest in the activities of the Institution and a thorough knowledge of its affairs, and his wise counsel will be greatly missed in the meetings of the board.

FRANCIS HENRY PARSONS

Francis Henry Parsons, assistant in charge of the Smithsonian Division of the Library of Congress for 25 years, died July 25, 1925. Although Mr. Parsons was an employee of the Library of Congress, his close association with the Smithsonian makes it fitting that his career be briefly reviewed here.

Born January 23, 1855, in Cleveland, Ohio, Mr. Parsons was the son of Charles Henry and Sarah Rice Parsons, both of New England ancestry. In September, 1862, he came with his parents to Washington, where the remainder of his life was spent. Due to delicate health, his education was acquired from private instruction, supplemented by extensive reading.

In January, 1872, he was appointed by Commander James H. Gillis, United States Navy, as his clerk, and sailed with him on the store ship *Supply* from New York to Rio de Janeiro: he was mus-

tered out of the Navy August 8, 1872. From 1873 to 1894 he served with the United States Coast and Geodetic Survey; on one of its expeditions he discovered some rare Indian pottery, which is now in the United States National Museum. While connected with the survey he was selected to assume the duties of chief of library and archives, and reorganized that branch of the service. From 1894 to 1900 he was a computer in the United States Naval Observatory.

In April, 1900, Mr. Parsons was appointed assistant in charge of the Smithsonian Division of the Library of Congress, and it was here that his major life-work was accomplished. The division had been established in the same year to care for the valuable collection of the publications of institutions and societies comprising the Smithsonian deposit (dating from 1866) and the Library of Congress accessions.

In the 25 years of his incumbency he saw the collection grow into a great library, perhaps unequalled anywhere for purposes of scientific research. Mr. Parsons brought to his task infinite care and patience, and a wide knowledge of learned societies and their methods of publication, and his colleagues in the Library of Congress learned to depend upon the fullness and accuracy of his records. His contribution to the care and up-building of the collection, which he carried on with the constant cooperation of the Smithsonian Institution, will be a lasting memorial.

Respectfully submitted.

CHARLES D. WALCOTT, *Secretary.*

APPENDIX I

REPORT ON THE UNITED STATES NATIONAL MUSEUM

SIR: I have the honor to submit the following report on the condition and operations of the United States National Museum for the fiscal year ended June 30, 1926.

The total appropriations for the National Museum for the fiscal year amounted to $598,392, an increase of $13,600 over the previous year. The additional sums available include $7,600 for increases in salaries, of which $5,100 came through reallocations of positions by the Personnel Classification Board; $1,000 for increase in salaries of employees in the shops, and $1,500 for employment of special watchmen to allow the opening on Sunday of the Arts and Industries Building. The sum of $6,500 was added to the funds for printing and binding. The appropriation for the purchase of books for the Museum library was decreased by $500, leaving only $1,500 available, an amount insufficient for the purpose in view of the present output of scientific publications.

Though the increases noted have afforded a certain measure of relief, particularly in the important matter of publications, the funds available for administration above the total of the pay roll are inadequate for the needs of the Museum. The amounts now in hand for operation are barely sufficient for routine expenditure for needed supplies when handled with the greatest possible economy, leaving only small sums available for the purchase of specimens and little or nothing for explorations.

The collections of the National Museum grow steadily in size and importance through transfers from other governmental agencies, from collections or single specimens presented by outside agencies, or through participation by members of the staff in expeditions financed from outside sources. This support is fully appreciated but it should be supplemented by appropriations that will permit the development of the many opportunities that come to us to obtain new information and material through direct field investigation. Further, the Smithsonian Institution, through the National Museum, should be in a position to develop useful researches of its own in many lines. Augmented funds for the purchase of specimens are also necessary since many gaps exist in our series. Though occasionally a gap is filled by gift, there should be funds for making

purchases when desirable specimens are offered at reasonable prices, as there can be no question but that every opportunity should be utilized to complete the collections of the Museum. Civilized man is occupying increasing areas of the surface of the earth, and with his occupation come such vast changes from the original condition that natural conformations are destroyed and hundreds and thousands of species of animals and plants must disappear. Only those remain that are sufficiently adaptable to fit into the modified scheme brought about by man's presence, and those at all sensitive to change or that require special conditions for their existence inevitably disappear. The next 50 years will offer the last opportunities to secure many forms of nature for preservation for the information and study of future generations, so that yearly it becomes more and more important, in fact a duty, to secure such material. Opportunities now neglected may never offer again. Certainly the National Museum of one of the greatest countries in the world should not fall behind in such matters.

Another matter deserving most serious consideration is that of the status of pay of the members of the staff. When the general reclassification act went into effect on July 1, 1924, it included provision for increase in pay at regular rates in the various grades. During the present year the third survey of the efficiency of the entire staff has been made with the result that it has been found that the majority have attained an efficiency rating sufficient to warrant promotion. The majority still stand at the entrance salaries in their respective grades. The financial assistance already accorded the staff has been greatly appreciated but it should be supplemented now, after a lapse of three years, as indicated. It is important that provision be made to make the promotions indicated to maintain the morale of the personnel. Such promotion is required especially in the many low salaried positions since these do not afford a proper living wage.

Modern developments in transportation, particularly the automobile, have brought to the National Museum a greatly increased attendance, one drawn from a broader area of our country than ever before. Parking spaces near the Museum are crowded daily, except during the colder months, with cars bearing license tags from every State in the Union. The educational function of the collections has thus been broadened and extended and personal contact has been established with a larger body of the public. Interest in matters that pertain properly to the sphere of a museum has also increased, with a resultant growth in number of inquiries by mail and in amount of material forwarded for identification or for information regarding it.

The radio program of the Smithsonian Institution organized two years ago has continued as a regular winter feature of the program of Station WRC, and has attained marked popularity as indicated by growing interest in the subject matter of the various talks. Thirty-two talks were given during the year from August 5, 1925, to May 29, 1926, through the medium of 30 speakers, 14 of whom were members of the Smithsonian staff, including 12 from the National Museum. Seven of these talks reached a broader audience than usual as they were broadcast also from station WBZ in Springfield, Mass. The subjects covered a wide range of topics from butterflies to earthquakes, and turtles to comets. The subject matter of a number has been given permanent preservation by means of publication in the pages of the Scientific Monthly through the interest of its editor, Prof. J. McKeen Cattell. As an educational factor for the spread of authentic scientific information the radio has a steadily increasing importance, and is a means for the diffusion of knowledge among men wholly in accord with the aim and ideals of the Smithsonian Institution.

COLLECTIONS

The growth in collections housed in the National Museum, while not so extraordinary as last year, has brought rich additions to our material. The total number of specimens received amounted to 254,032, while there came to hand in addition more than 1,000 lots of material for examination and report. These included approximately 28,000 individual specimens in the department of biology alone. Gifts to schools and other educational agencies included 3,857 objects, while 37,682 specimens were sent out to institutions or to private individuals in exchange for other materials. Loans of many thousands of specimens were made to specialists for study.

Following is a résumé of the more important accessions for the year in the various departments and divisions of the Museum:

Anthropology.—Among noteworthy accessions there may be mentioned an excellent series of ethnological and cult material acquired by the Rev. D. C. Graham in western China and eastern Tibet, during his explorations in that region for the Smithsonian Institution. The specimens obtained are especially valuable in completing collections previously at hand of the Miao aborigines, a native race whose culture will be lost as they are replaced by Chinese. Maj. Edward D. W. Dworak, formerly governor of the island of Mindanao, loaned a fine collection of Moro brass work for exhibition.

The Bureau of American Ethnology transferred a collection of 105 artifacts obtained in Youngs Canyon, Ariz., by J. C. Young, a welcome addition to the collections in American archeology. An

ancient maskette from Mexico, beautifully carved from hard stone, was presented by Dr. W. H. Holmes. Considerable additions to the collections of ancient stone implements from France, collected by members of the American School of Archæology in France, were deposited through the Archæological School, of Washington.

In the Division of Physical Anthropology, valuable human skeletal material of Australian aboriginals was obtained by exchange with the Adelaide Museum and through personal collection by Doctor Hrdlička. There came also miscellaneous Indian skeletons from Mississippi collected by H. B. Collins, jr., and a cast of a Neanderthaloid skull presented by the Instytut Nauk Anthropologicznych of Warsaw.

The fine collection of laces gathered by the late Mrs. H. K. Porter remained on exhibition in the section devoted to art textiles through the kindness of Miss Annie May Hegeman.

Biology.—Though the total of accessions in this department was smaller than last year, much of the material was of such high quality as to offset its lessened amount. The greatest single contribution was that of the Dognin collection of lepidoptera purchased by a special fund of $50,000 assembled from friends of the Institution by Dr. W. Schaus, honorary assistant curator of insects. This collection, mainly of New World forms, adds about 82,000 specimens, including 3,000 types, to the collection. The addition of this material gives the National Museum what is undoubtedly the best representation of American species in this group to be found in any museum in the world. Doctor Schaus, accompanied by Mr. J. T. Barnes as assistant, went personally to France to pack the collection for transfer to Washington.

The Hamfelt collection of microlepidoptera, secured through the United States Department of Agriculture, is another contribution of great importance to this group.

Collections obtained by Dr. W. L. Schmitt from South America form large and important additions to the division of marine invertebrates. Through the Bureau of Fisheries, further series of specimens taken on the *Albatross* expedition of 1911 to Lower California have been transferred to the National Museum. The material recently received includes birds, fishes, and crustaceans, with a number of type specimens.

Considerable contributions have come from China and southeastern Asia, excellently supplementing earlier collections from this general region received mainly through the generosity and interest of Dr. W. L. Abbott. A valuable collection of birds collected by C. Boden Kloss in Siam and on the Mentawi Islands west of Sumatra, presented by Doctor Abbott, adds material from a new field. Important collections of mammals, birds, reptiles, amphibians, crustaceans, and

mollusks, have come from Dr. H. M. Smith, fisheries advisor to the Government of Siam, while Dr. H. C. Kellers, United States Navy, detailed by the Navy Department to accompany the United States Navy eclipse expedition of 1925 to Sumatra, has returned with valuable series of mammals, birds, reptiles, amphibians, fishes, marine invertebrates, and other material; from Rev. D. C. Graham in western China have come additional collections of mammals, birds, bird skeletons, reptiles, amphibians, fishes, mollusks, crustaceans, and insects, including particularly important series from the Wa and Omei Mountains in western Szechwan.

Mr. B. H. Swales, honorary assistant curator of birds, presented 45 skins to the bird collections, a donation of importance, since all represent genera or forms not previously represented in the Museum. Among birds of especial interest may be mentioned a peculiar roller from Madagascar, *Uratelornis chimaera*, a flamingo *Phoeniconaias minor*, the only form of the family lacking in the collection, a starling *Leucopsar rothschildi* from the island of Bali, the streaked breasted tinamou *Rhynchotus maculicollis* and a dipper *Cinclus schulzi* from Argentina, together with a rare finch *Idiopsar brachyurus*, long known only from the type specimen, which came to the National Museum in 1864. Mr. Swales' donations include also a specimen in alcohol of *Mesoenas variegatus*, a highly peculiar form, and seven skeletons of North and South American birds.

Dr. Casey A. Wood, collaborator in the division of birds, presented 20 bird skins from the Fiji Islands and 2 skins and 32 alcoholic specimens from Ceylon.

Geology.—The records in the department of geology show a decided increase in the number of accessions; and although the sum total of specimens received is less than last year, very choice and much-needed materials are included.

In the division of geology the bulk of material received was by transfer from the United States Geological Survey, of particular note being a valuable reference collection consisting of approximately 5,000 specimens of ores of the rarer metals. This collection, which was assembled by Mr. Frank L. Hess during many years of field work, comprises unquestionably the most complete series of such ores in existence. Many other suites of described material are included in these transfers. Additions to the meteorite collection were acquired chiefly through exchanges, with examples of 13 falls registered as new to the collection.

The late Col. W. A. Roebling, by his generous donation of money for the purchase of minerals, was the chief contributor to the mineral collections, 11 accessions, comprising choice exhibition and study specimens, being recorded in his name. Other important additions are nuggets of gold formerly in the numismatic collection of the

United States Mint at Philadelphia; a collection of Bolivian tin minerals, in part presented and in part deposited by Mr. Jack Hyland; and a rare palladium amalgam from British Guiana presented by the government of that country through Sir John Harrison. Of outstanding importance for exhibition is a large group of fluorite crystals thought to be the most unusual yet brought to public attention in America. This was presented by the Benzon Fluorspar Co. of Cave-in-Rock, Ill. Rare minerals from foreign countries were acquired by exchange, and 37 cut stones were added to the Isaac Lea collection of gems through the Chamberlain fund.

Material of inestimable value to the study series in stratigraphic paleontology was added chiefly through field explorations by members of the staff. Invertebrate fossils from the Cambrian and Ozarkian rocks of British Columbia, from the Lower Paleozoic of Great Britain and the continent of Europe, from the Middle and Upper Paleozoic of the Central States, and from the Devonian of New York, all selected with the museum's special needs in mind, are among the collections thus secured. Gifts and transfers added important type specimens, as well as vast collections of Cenozoic fossils. Although purchases were necessarily few in number, a few excellent exhibition specimens were thus procured; exchanges added valuable foreign material.

Notable among the accessions of vertebrate fossils is a series of shale and sandstone slabs containing tracks of extinct animals, obtained from the Hermit and Yaki trails in Grand Canyon National Park by Mr. C. W. Gilmore in continuation of his work of last year. The present collection considerably exceeds in number of specimens the one obtained last year, and is of unique interest in containing faunas from three distinct levels, through a geological thickness of 950 feet, and from three distinct formations. Their great age, variety, and excellent preservation, as well as unusual occurrence, are features endowing these tracks with particular value in throwing light upon the character of the animal life of the Permian period. Fossil mammal material collected in Florida by Dr. J. W. Gidley is of unusual value as evidence for consideration in working out the problem of early man in that State.

Arts and industries.—The aggregate collections in this department indicate a fair increase over the previous fiscal year.

In the section of mineral and mechanical technology the most important accession has been the airplane *Chicago*, the flag plane during the round-the-world flight of 1924, which was transferred to the Museum by the War Department. The Collier trophy of the National Aeronautic Association, awarded annually for some outstanding development in aeronautics, which was presented this year to Dr. S. Albert Reed for his development of a high-speed metal

propeller, has been placed on exhibition by Doctor Reed with the aeronautical exhibit.

An exhibit to illustrate the modern watch industry was installed by the Elgin National Watch Co.

In the textile collections 150 specimens of cotton fabrics of various types were presented by the Pacific Mills through Lawrence & Co. An interesting series of casement material of different weaves illustrating forms of curtains was presented by the Quaker Lace Co., and the North American Lace Co. presented a set of cotton and rayon laces made by machines in imitation of types of hand-made laces.

The Ford Motor Co. installed a model illustrating the process of production of methyl alcohol with specimens of the main products derived from the distillation of wood, including charcoal, briquets, tars, oils, acetate of lime, methanol and many others. Another model loaned by the same company illustrates part of a battery of by-product coke ovens.

The Karolith Corporation contributed 262 specimens of articles manufactured from casein according to a basic process developed by chemists at the Mellon Institute in Pittsburgh.

In the food exhibits there was installed a large model of a milk condensary, gift of the Borden Sales Co. (Inc.), designed to illustrate the production of milk and its manufacture into a condensed product. The Kroydon Co. presented a series of 10 specimens showing the manufacture of golf clubs from hickory and persimmon wood. The latter wood has been found especially suitable for the heads of clubs because of its unusual density and toughness.

In the division of graphic arts the most important accession for the year was a work by John Evelyn entitled "Sculptura," published in England in 1662, in which is given the first account of the art of mezzotint engraving. Mr. J. Frank Wilson supplied a series of etchings, wood engravings, lithographs, and paintings, many of them especially fine examples that had been on exhibition in the division many years ago, and that now come as a permanent accession. Another important accession of specimens of engravings, proofs, tools, and materials has come from Mrs. G. F. C. Smillie, whose husband was long chief portrait engraver at the Bureau of Engraving and Printing.

Through the cooperation of Mr. Will Hays, president of the Motion Picture Producers and Distributors of America (Inc.), there has been presented to the Museum a valuable set of machines and material to illustrate the growth of the motion-picture industry. The exhibits in this industry are assuming increased importance and it is planned to make them as complete as possible. There have also come to the exhibits in photography many additions in pictorial photographs from some of the foremost workers in the world in this

field, including a bromide print entitled "Damp and Cold," by Floyd Vail, and prints by many others.

The Loeb collection of chemical types, established to preserve samples of the rarer chemical compounds, has been increased by 165 specimens. The collection is broadening its usefulness through contacts with a steadily increasing circle of chemists.

History.—During the year 17,256 specimens were added to the historical collections, a considerable increase over last year. Additions to the military and naval collections were of especial interest and value. Mrs. Beulah Hepburn Emmet presented a collection of 131 American and foreign military and naval swords dating back to 1750, forming the collection of Dr. Alfred J. Hopkins and known by his name. There are included many fine and ornate examples of the sword-makers art. In addition to swords of the Continental Army during the Revolution, there are many showing the development of the sword in the American Army through the nineteenth century to the close of the Civil War. The set of naval swords covers a like period of naval history. A large and interesting series of relics of Gen. Philip H. Sheridan was donated by Mrs. Philip H. Sheridan.

In the numismatic collections, 65 modern coins and tokens were received as a bequest from the late Col. Thomas L. Casey through Mrs. Laura Welsh Casey; 112 Chinese coins, many of them very old, were received from Rev. D. C. Graham; and 68 French coins, tokens, and paper currency of the period of the World War were presented by Capt. Charles Carey.

The philatelic collections received large additions from the Post Office Department including a set of 12,314 varieties of precanceled stamps from 1895 to the present date. Transfers from the Post Office Department to this collection have included all of the new stamps, both regular and commemorative issued by the 278 governments in the Universal Postal Union. Commemorative stamps of our own government have included three issues, the centenary of the arrival of Norwegians in Minnesota, the Sesqui-Centennial of the signing of the Declaration of Independence, and the erection of a memorial to John Ericsson, inventor and engineer, builder of the Monitor.

EXPLORATIONS AND FIELD WORK

The bulk of the accessions to the collections during the year came from expeditions and explorations organized under private auspices or by other governmental agencies.

In biology, important field work was carried on by Dr. Waldo L. Schmitt, curator of marine invertebrates under an award of the Walter Rathbone Bacon Scholarship of the Smithsonian Institution.

Doctor Schmitt collected from August, 1925, to February, 1926, at various stations on the coast of eastern South America from Brazil south to Buenos Aires, devoting his attention especially to the crustacean fauna, but collecting specimens in many other groups. The material secured is highly valuable and includes many species not previously in the National Museum, as well as many new to science.

Rev. David C. Graham continued his zoological explorations in Szechwan, western China, and though his travel in this region was hindered to some extent by civil warfare and the activities of brigands, he secured highly valuable collections in various branches of natural history. During the summer he visited Mount Omei and Washan where a number of new forms were procured and extensions made in the known ranges of others. The new material procured speaks well for Mr. Graham's skill as a collector, since the region had been visited by other naturalists who had collected there extensively.

During April and May, 1926, Dr. J. M. Aldrich visited Guatemala for the purpose of collecting important diptera needed in the study of the Museum collections. His work was financed from personal funds and by a small contribution from the Museum. He crossed from Puerto Barrios to Guatemala City, and at the request of the Guatemalan Government went also to Coban as advisory member of a party to study locust infestations and possible means for their control. His specimens have included many important additions to the collections. Mr. C. T. Greene, honorary assistant custodian of diptera, visited Panama from March to May in the interests of the Federal Horticultural Board mainly in connection with studies of the fruit flies of the genus *Anastropha*. Mr. Greene made extensive collections of diptera which have added extensively to the Museum series.

Through the cooperation of the Navy Department, Dr. H. C. Kellers, United States Navy, was detailed to the United States Naval Observatory Eclipse Expedition to Sumatra that he might, while serving as surgeon to the members of the party, have opportunity to collect zoological material. The expedition was established in the village of Kepahiang, inland from the seaport of Benkoelen, Sumatra. During the period from October to January, Doctor Kellers procured a rich collection of marine invertebrates, fresh-water crustacea, insects, fishes, reptiles, amphibians, birds, mammals, and plants. Considering the time available for the work the collections made are extensive and contain many interesting forms new to the Museum. They are marked by careful preparation. The cooperation of the Navy Department in this matter has been greatly appreciated.

Dr. Hugh M. Smith, honorary associate curator in zoology, at present fisheries adviser to the Siamese Government, through arrangement with the National Museum and with some outside assistance, has secured valuable collections from Siam that have added especially to the series of fishes, reptiles, amphibians, birds, and mammals. The material received is especially important since there has been little previously in the Museum from this region. Preliminary examination has shown several previously unknown species, some of which have been already described. The region is one of considerable importance since it connects the Malayan region with China, from both of which we have great series of specimens.

Prof. M. M. Metcalf, of Johns Hopkins University, presented to the Museum extensive series of batrachians collected during work on opalinid parasites in that group in South America.

The National Geographic Society has transferred to the National Museum specimens collected by Dr. Walter Koelz during the expedition of 1925 to Greenland under Capt. Donald B. MacMillan. Capt. R. R. Bartlett forwarded an interesting series of marine invertebrates collected during a visit to the coast of Labrador, and Mr. J. Morgan Clements sent collections of marine invertebrates and fishes secured during travels in Polynesia.

Mr. Paul Standley, associate curator of plants, through cooperation with Mr. Oakes Ames and the United Fruit Co., visited the Canal Zone and Costa Rica, making extensive collections of plants.

A week was spent at the Barro Colorado Island Biological Station gathering data for a list of the plants of the island. In Costa Rica Mr. Standley visited the Canton de Dota, where are found the first paramos north of Colombia. A month in the mountains of Guanacaste and work in other upland sections as well as in the Atlantic lowlands gave important data to be utilized ultimately for a report on the flora of Central America.

Dr. W. L. Abbott, through his continued interest in the National Museum, financed an expedition by Mr. Emery C. Leonard, aid in the division of plants, to northern Haiti for a period extending from November to March. The 9,000 specimens procured will supplement material previously in hand for a report on the botany of the island.

Dr. Aleš Hrdlička, curator of physical anthropology, in the department of anthropology, under the joint auspices of the Buffalo Society of Natural Sciences and the Smithsonian Institution, made an extensive journey that included areas where remains of fossil or ancient man had been discovered in southern Asia, Australia, and Africa, and returned with series of photographs, specimens, and first-hand information of great value. Mr. H. W. Krieger carried on field

work among the Indians of the State of Washington, and on the coast of southeastern Alaska, through a cooperative arrangement with the Bureau of American Ethnology. Mr. H. B. Collins, jr., under the same auspices, visited a number of Indian village sites in Mississippi and Louisiana to study ancient Choctaw, Attacapa, and Muskhogean cultures.

Investigations at Pueblo Bonito under the auspices of the National Geographic Society by Mr. Neil M. Judd, curator of American archeology, were continued for another season since it had not been practicable to complete the work in five years as originally contemplated. Mr. Judd left for the site of the excavations in May and will continue his work through the summer. Mr. Judd, as chairman of the Research Committee of the Archaeological Society of Washington, guided researches carried on by Dr. Manuel Gamio, for the society at pre-Columbian village sites in the highlands of Guatemala.

Under grants from the O. C. Marsh and Joseph Henry endowment funds of the National Academy of Sciences, Secretary Walcott, assisted by Mrs. Walcott, continued field work in the early geological strata of Canada during the season of 1925, beginning at Lake Louise Station in Alberta on July 9. Work this year included discovery of new fossil deposits in the great lower Palaeozoic section north of Bow Valley, and in the lower Ordovician rocks of the Johnston-Wild Flower Canyon Pass section. Results from this work have been considerable though the season was unfavorable because of forest fires, whose smoke hindered photographic work, and frequent snow falls that interfered with field investigations.

Dr. Charles E. Resser and Dr. E. O. Ulrich were members of the Smithsonian-Princeton expedition to Europe during the summer of 1925 to study important outcrops of the lower Palaeozoic beds. The route included more than 7,500 miles by automobile through England, Wales, Scotland, the Scandinavian countries, Germany, Czechoslovakia, Austria, Switzerland, and France. As a result of this work many important fossils were secured and arrangements were perfected for valuable exchanges.

During August and a part of September, 1925, Dr. R. S. Bassler, in cooperation with the Tennessee Geological Survey, continued his geological studies in the central basin and highland rim areas of Tennessee. His work this season covered stratigraphic surveys of approximately 250 square miles divided among four areas. Mr. E. R. Pohl was occupied for several weeks in 1925 in critical studies of the Devonian formations in the State of New York. This work was continued in May and June, 1926, in western New York and in Ontario with resultant information that enables a more correct idea to be formed as to the proper stratigraphic horizons for many

series of fossils whose previous position had been unsatisfactorily known.

Under an allotment from the Marsh fund of the National Academy of Sciences, Mr. Charles W. Gilmore visited the Grand Canyon in Arizona and in cooperation with the National Park Service continued work on beds containing fossil footprints. As an outcome of this season's investigation there are now known three distinct series of these tracks that serve to indicate the animal life of the Permian world. The beds in which the tracks are found are especially notable for the graphic picture that they give, through their exposure in the canyon walls, of the enormous reach of time during which vertebrated animals have had their evolution.

Dr. James W. Gidley, under the auspices of the Bureau of American Ethnology, continued work in the vicinity of Melbourne, Fla., in investigating evidence as to early man in Florida and in study of the Pleistocene deposits in that region. In October, 1925, Doctor Gidley was detailed to examine a spring deposit in southwestern Oklahoma, where he secured a number of specimens of ethnological and geological importance.

BUILDINGS AND EQUIPMENT

Minor repairs to the various buildings housing the Museum have kept them in good condition during the year.

It was necessary to replace a space of worn-out concrete roadway, slightly more than 87 feet in length, leading from B Street to the east entrance to permit the entry of trucks with coal and other supplies. Other repair work on the Natural History Building consisted of the usual painting required on window frames, repairs to the concrete water table, and pointing of joints in the stone steps at the south entrance.

In the Arts and Industries Building the wooden floor on the south end of the gallery of the south hall was replaced by terrazzo, a great improvement that lessens fire risk. Much paint and repair work was required for the exterior of the building. In the Smithsonian Building the public portion of the disbursing office was remodeled to give greater security during the handling of funds on pay days.

Minor repairs were required in the Freer Gallery and the aircraft building.

In the heating plant the consumption of coal amounted to 3,465 tons, the excess over last year being due to the longer period of continuance of cold weather. Considerable repairs were made to the plant and more will be required annually since it has now been in operation for 17 years. The boilers were inspected by the Steamboat Inspection Service of the United States and found to be in good

condition. The elevators have been regularly inspected by the building inspector of the District of Columbia and certain additional safeguards installed to protect passengers as fully as possible. The total electric current produced amounted to 493,295 kilowatt-hours, manufactured at a cost of 2.32 cents per kilowatt including labor, material, interest, and depreciation on the plant.

The ice plant produced 344.1 tons of ice at a cost of $3.51 per ton. The increased cost is due to a new compressor installed during the year and some other changes in the plant that will lead to increased efficiency and will reduce the expense of operation for succeeding periods.

In the shops there were made during the year 11 exhibition cases and 117 storage cases and other pieces of laboratory furniture. In addition, 40 pieces of storage, laboratory, and office furniture were acquired by purchase.

MEETINGS AND RECEPTIONS

The lecture rooms and auditorium of the National Museum were were used for 110 meetings covering a wide range of activities.

Governmental agencies using the lecture and meeting rooms included the United States Tariff Commission for an exhibition of motion pictures depicting methods employed in shipping living birds, the Extension Service of the United States Department of Agriculture for an exhibition of motion pictures, and the Federal Horticultural Board for various hearings, particularly with regard to quarantine regulations for certain bulbs. Members of the Forest Service held a series of meetings during the year dealing with various phases of their work.

Scientific societies that met regularly in the meeting room included the Entomological Society of Washington, the Society for Philosophical Inquiry, the Anthropological Society of Washington, and the American Horticultural Society. Meetings were held also by the National Parks Association, the Federation of Music Clubs of the District of Columbia, the Vivarium Society, the Wild Flower Preservation Society, the Audubon Society of the District of Columbia, the Art and Archaeological League of Washington, the Washington Society of Engineers, the National Soy-bean Growers' Association, and by the Biological Society in cooperation with the Audubon Society.

The school of foreign service of Georgetown University conducted a series of 15 lectures on the American Constitution and ideals as compared with the Communist ideals manifested in Bolshevism. The second national spelling bee, organized by the Courier-Journal, of Louisville, Ky., held June 17, was won by Miss Pauline Bell, of Clarkson, Ky.

The second Industrial Conference of Women under the auspices of the United States Department of Labor, held from January 18 to 21, included at its initial session on January 18, the reading of a letter from President Coolidge and addresses by Hon. James J. Davis, Secretary of Labor; Mrs. John Jacob Rogers, Member of Congress from Massachusetts; and Mrs. Julius Kahn, Member of Congress from California.

An illustrated address on the collections in the National Gallery of Art was delivered by Dr. Gertrude R. Brigham on December 5. On January 25 under the auspices of the Twentieth Century Club there was an illustrated lecture on the National Gallery of Art by Mrs. Porter R. Chandler.

Educational and other organizations holding meetings in the buildings included the Associate Alumnae of Vassar College, the department of superintendents of the National Educational Association, the Smithsonian Relief Association, the National League of Girls Clubs, the Veterans of Foreign Wars of the United States, Federal Post No. 824, the Girl Scouts, the Nature Study Corps of the public schools of the District of Columbia, a class in bird study from George Washington University, and a class in parasitology from Howard University.

On October 21 Dr. Aleš Hrdlička gave to the staff an account of his studies of ancient man during his journey in southern Asia, Australia, and Africa. There were also several exhibits of pictures and talks for members of the staff, including one by Mr. Rollin R. Winslow, U. S. Consul at Surabaya, Java.

On November 5 there was a lecture by M. Georges Plasse on the making of aquatints in color, illustrated by motion pictures taken in the studio of the speaker in Paris.

On February 20, under the auspices of the Smithsonian Institution, M. Henri Correvon of Geneva, Switzerland, gave an address on Alpine plants and their use in rock gardens.

On June 4 Dr. Johannes Schmidt, Director of the Physiological Division, Carlsberg Laboratories, Copenhagen, Denmark, delivered an illustrated address on Danish Oceanographic Expeditions—Eel Investigations, before a meeting held under the auspices of the Carnegie Institution of Washington, the Washington Academy of Sciences, the Biological Society of Washington, and the Smithsonian Institution.

EXHIBIT AT THE SESQUI-CENTENNIAL

Considerable time was devoted during the year by members of the Museum staff to the preparation of material to form part of the Smithsonian exhibit at the Sesqui-Centennial Exposition in Philadelphia. The anthropological exhibits include miniature models of

Indian village groups, life-size models of Indian potters, silversmiths, and weavers at work, and a series to illustrate the evolution of the lamp, cup, knife, fork, spoon, hammer, saw, drill, and ax. The chief exhibit in biology is a mounted group of the Bighorn, or Rocky Mountain sheep. Geology is represented by a series illustrating the weathering of rock to form soil, a collection of gems and precious stones found in America with the minerals in which they occur, and a number of interesting fossil forms including fossil fish, turtles, plants, and algae. The Museum's historical exhibit comprises a series of arms, insignia, uniforms, and medals, and models of Columbus' ships, of the *Mayflower*, and of the *Constitution*. Mechanical technology is represented by an extensive exhibit illustrating the development of the steam engine and of the steamboat. In graphic arts are shown examples illustrating the progress in photography from the days of the daguerreotype to the present, and other forms of graphic expression. The entire Smithsonian exhibit was prepared and installed in Philadelphia under the direction of Mr. W. de C. Ravenel, administrative assistant to the Secretary.

MISCELLANEOUS

Visitors to the buildings under the National Museum show a steady annual increase, in the present year registering a total of 1,106,305. The attendance in the several buildings was recorded as follows: Smithsonian, 110,975; Arts and Industries, 355,762; Natural History, 581,563; Aircraft, 58,005. The average daily attendance, including Sunday, was approximately 2,500. The exhibition halls were closed on Christmas day and New Year's.

The Museum published 8 volumes and 49 separate papers during the year, while its distribution of literature amounted to 96,804 copies of its books and pamphlets.

Additions to the Museum library have included 1,660 volumes and 1,466 pamphlets, obtained mainly by exchange or donation. In the considerable progress made in library matters during the year, mention may be made of binding and of the checking of sets of periodicals and of the attempt to fill existing gaps in these series.

Dr. Casey A. Wood, well known as an ornithologist, was given honorary appointment as collaborator in the division of birds on January 9, 1926. Doctor Wood has shown deep interest in the collections of that division for a number of years.

Dr. H. H. Bartlett, director of the botanical garden of the University of Michigan, who will collect specimens in Formosa and Sumatra on behalf of the National Museum and the University of Michigan, was appointed collaborator in the division of plants for two years beginning March 17, 1926. Dr. William H. Longley, of

Goucher College, who is working in cooperation with the Museum, was made collaborator in the division of marine invertebrates on March 20, 1926. The honorary appointment of Dr. George Grant MacCurdy as collaborator in the department of anthropology was extended for one year beginning February 14, 1926.

Earl D. Reid was promoted from clerk to aid in the division of fishes on August 1, 1926. Miss Isabel L. Towner was appointed assistant librarian of the Museum in January, 1926, succeeding the late Mr. N. P. Scudder, in charge of the Museum library. Miss Hortense Hoad, aid in the division of history, resigned on January 31, 1926. Mr. Paul G. Van Natta left the service by resignation on May 6, 1926. It may be noted that turnover in the watch force has become so great that in the last year the 61 positions of guard were held by 80 persons.

Dr. Brayton H. Ransom, assistant custodian of the helminthological collections of the Museum since January 5, 1905, died September 17, 1925, after a brief illness. Other deaths among members of the Museum force were those of Mr. J. H. Williams, laborer, on September 4, 1925; Mr. Henry Gibson, laborer, November 21; Mr. Sylvester W. Baldwin, laborer, December 24; Mr. John E. Johnson, watchman, March 26, 1926; and Mr. Marston R. Carey, mail carrier, April 1.

Respectfully submitted.

ALEXANDER WETMORE,
Assistant Secretary.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 2

REPORT ON THE NATIONAL GALLERY OF ART

SIR: I have the honor to submit the inclosed report on the affairs of the National Gallery of Art for the year ending June 30, 1926.

In the annual report of the director of the gallery for the fiscal year 1924–25 a list of the personnel of the staff was given, and the nature of their activities was briefly indicated. No noteworthy changes have been made during the present year. Reference was made to a decided falling-off in the acquirement of art works in recent years, a result attributed to the lack of available space for the accommodation of additions save of the most limited kind. The dire need of a gallery building was there explained, and the sketch plans for such a building, prepared under the direction of the Regents of the Institution, by Mr. Charles A. Platt, architect of the Freer Gallery, were discussed in some detail. The estimated cost of the structure, which when completed, would be worthy of a people who aspire to bring together in Washington a representative collection of the art treasures of the world, is $8,000,000, although there appears no reason why this large expenditure, if approved by Congress, should not extend over a number of years. Such a building would not only make additions by gift and bequest possible, but would permit the assemblage, in association with the paintings and sculptures, of the collections of graphic arts, ceramics, textiles, etc., now installed for lack of gallery space, in several separate branches of the Museum. It would accommodate the National Portrait Gallery and the extensive collections of American history which now occupy nearly 80,000 feet of floor space belonging to and much needed by the natural sciences.

THE GALLERY COMMISSION

The fifth annual meeting of the National Gallery Commission was held in the Regents' room of the Smithsonian Institution, December 8, 1925. The members present were: Gari Melchers, chairman; W. H. Holmes, secretary; Herbert Adams, Joseph H. Gest, John E. Lodge, Charles L. Moore, James E. Parmelee, Edward W. Redfield, Edmund C. Tarbell, and C. D. Walcott. The varied activities of the gallery were considered, and attention was given to the accessions for the year, to the Ranger fund purchases and their disposition, to the problems of the proposed national portrait gallery, and to the pro-

edure to be adopted in considering acceptance of gifts and bequests f art works. After discussion of the latter topic the following esolution was adopted:

Resolved, That the advisory committee of the National Gallery of Art ommission shall consist of the full membership of the commission; that in arrying out the functions of the advisory committee a quorum shall consist of even members, four of whom shall be artists or museum directors.

The commission considered at some length the agencies now nlisted in the promotion of the prospective gallery building, without developing any plan of procedure. The activities of the American Federation of Arts and the Federation of Women's Clubs in ppealing to the American people for support of the gallery building project were brought to the attention of the commission and ncouragement was found in the assurance that appreciation of art s growing rapidly in all sections of the country.

The expiration of the terms as members of the commission of W. K. Bixby, W. H. Holmes, and Herbert L. Pratt was announced. The secretary was directed to cast the ballot of the commission ecommending to the Board of Regents the reappointment of these nembers for the ensuing term of four years. It was stated that Mr. A. Kingsley Porter, elected to the commission in 1921, had thus far ot attended any meeting of the commission and that, in accordance with section 3 of Article V of the plan of organization of the commission, his membership automatically terminated, December 8, 1925. To fill the vacancy thus created, the commission passed a esolution recommending to the Board of Regents, the appointment f Mr. John Russell Pope, architect. The appointment was declined y Mr. Pope in a letter dated January 5, 1926.

The Regents' plan provides for the election of officers and members f committees at the annual meeting, and the secretary of the commission was directed to cast the ballot of the commission for the eelection of the present incumbents.

At 12 o'clock the commission adjourned and at 2 o'clock met in the National Gallery as the advisory committee to consider the offerings f art works for the year. The Libyan Sibyl, a statue in Carrara marble, heroic in size, by William Wetmore Story, and a marine painting, The Sea, by Edward Moran, were accepted by the committee as additions to the National Gallery collections.

CATALOGUE

Early in the year a second and enlarged edition of the catalogue f the gallery collections was submitted to the Public Printer. Page proofs were read in November and the volume appeared in May. It contains 118 pages and 104 plates. The permanent accessions umber 93 and the artists represented 228.

MRS. HENDERSON'S OFFER

Decided impetus has been given recently to the gallery's building project by the very generous offer to Congress by Mrs. John B. Henderson of a valuable tract of land containing between 4 and 5 acres, on Meridian Hill, facing Sixteenth Street, as a gallery building site.

ACTIVITIES OF THE AMERICAN FEDERATION OF ARTS AND THE FEDERATION OF WOMEN'S CLUBS

The American Federation of Arts and the Federation of Women's Clubs continued their work on behalf of the gallery, furthering its interests with propaganda and lectures, with the use of lantern slides and photographic prints.

SPECIAL EXHIBITIONS HELD IN THE GALLERY

Loan exhibition of early American portraits, miniatures, and silver.—The loan exhibition season was opened by a noteworthy display of early American art treasures comprising portrait paintings, miniatures, and silver, on view from December 5, 1925, to January 31, 1926. The exhibition, which was drawn from all available sources, was conceived and assembled by the Washington loan exhibition committee, the members of which are as follows:

Mrs. William C. Eustis, chairman.
Mr. Frederick H. Brooke, vice chairman.
Mrs. Porter R. Chandler, secretary.
Mr. James Parmelee, treasurer.
Mrs. William Penn Cresson.
Mr. Frederic A. Delano.
Mrs. Peter Goelet Gerry.
Dr. William H. Holmes.
Mrs. McCook Knox.
Miss Leila Mechlin.
Mr. C. Powell Minnigerode.
Mr. Duncan Phillips.
Mrs. Duncan Phillips.
Mrs. Corcoran Thom.

The very excellent illustrated catalogue of the exhibit was prepared by Miss Leila Mechlin and is introduced by a short historical sketch of the National Gallery.

The portrait exhibit, representing nearly every portrait painter of distinction previous to the year 1840, was organized and assembled at the cost of much exacting effort on the part of the subcommittee on portraits, the membership of which follows:

Miss Leila Mechlin, chairman.
Mrs. Porter R. Chandler, vice chairman.

Mrs. William Penn Cresson.
Mrs. W. M. Grinnell.
Mrs. McCook Knox.
Miss Sarah R. Lee.
Mr. Lynch Luquer.
Mrs. David A. Reed.

The portraits, 103 in number, were shown to excellent advantage, occupying the walls of the central rooms of the gallery, and surrounding the exhibits of silver and miniatures, which occupied the floor spaces. A four-page résumé of the portrait art of America is given, with brief mention of the masters, and much valuable biographical data regarding the painters is given in the catalogue.

The collection of miniatures was of surpassing interest and was in charge of the subcommittee on miniatures, the membership of which is as follows:

Miss Helen Amory Ernst, chairman.
Miss Elizabeth Allen White.
Mrs. John Hill Morgan.
Mrs. Minnigerode Andrews.
Mrs. Rose Gouverneur Hoes.
Mrs. Henry Leonard.
Mrs. Orme Wilson, jr.
Mrs. William Cabell Bruce.
Miss Lilian Giffen.
Mrs. J. Madison Taylor.
Mrs. William F. Wharton.

The installation, a most exacting task, was made by Miss Ernst, and was unusually attractive and of very wide interest. The catalogue of 208 numbers was introduced by a few interesting paragraphs on early American miniatures, by Mr. Albert Rosenthal.

The collection of silver was shown to excellent advantage in six large gem cases in the central room of the gallery. Maj. Gist Blair, chairman of the subcommittee, being unable to take part in the installation, the work was taken up by Mrs. John Henry Gibbons, aided by other members of the committee, which was constituted as follows:

Maj. Gist Blair, chairman.
Mrs. John Henry Gibbons.
Mrs. Breckinridge Long.
Mr. Hollis French.
Mrs. Miles White, jr.
Mr. Luke Vincent Lockwood.
Mr. R. T. H. Halsey.

The collection, numbering 255 examples of the art of early American silversmiths, was generally regarded as one of the most interesting and valuable ever brought together. The catalogue was introduced by a four-page story of the development of the art by Miss Elizabeth B. Benton.

The Dykaar exhibition.—An exhibition of portrait busts in marble and bronze, with certain other pieces, by Moses Wainer Dykaar was installed in the middle room of the gallery March 5 to March 20. The exhibit made a very favorable impression and included the following subjects.

Calvin Coolidge.
Mrs. Calvin Coolidge.
Warren Gamaliel Harding.
Dr. Alexander Graham Bell.
Abraham Cahan.
Eugene V. Debs.
Samuel Gompers.
Hudson Maxim.
Gen. George Owen Squier.
Justice Wendell P. Stafford.
Carolyn Harding Votaw.
Dr. Charles D. Walcott.
Rabbi Stephen S. Wise.
A Young Teacher.
The Modern Woman.
Nude Girl: Primavera.
Once Upon a Time.
Satyric Mask.
An American Student.
W. H. Holmes.

A bust in marble of Abraham Cahan, well-known author and editor, and one of W. H. Holmes, director of the gallery, were presented to the Smithsonian Institution by the sculptor.

The Italian exhibit of paintings, sculpture, etc.—The third exhibit of the season was an important assemblage of modern Italian art, collected and exhibited under the patronage of His Majesty the King of Italy. It was assembled on the invitation of the Italy-America Society of New York City by the Italian Minister of Public Instruction, the works being chosen largely under the personal supervision of Arduino Colasanti, director general of fine arts, Italy. The collection, installed under the competent direction of Dr. Lauro de Bosis, occupied the entire central series of rooms and connecting spaces in the gallery, with a running wall space of 430 feet. This display attracted more than ordinary attention. The excellent catalogue was prepared by the Italy-America Society and comprises 24 pages of text and 34 plates representing selections from the 290 items of the exhibit. The exhibit was opened to the public on the afternoon of March 25, with a reception given by the Secretary and Regents of the Smithsonian Institution, and was closed on April 24, 1926. An especially noteworthy feature of the catalogue is the four-page "Foreword" by Christian Brinton. His admirable characterization of the exhibit follows:

The aim of the present exhibition is to offer a balanced and comprehensive picture of current Italian artistic activity. The picture opens with the work of the great protagonists, Boldini, Mancini, and Medardo Rosso, and closes with a courageous presentation of Futurist painting and decorative art. Every movement of consequence finds place on these walls, with special emphasis upon the work of certain painters and sculptors who have risen to prominence as the result of postwar influences. You will hence be able to adjudge the merits of what may be termed the living art of Italy. You will be able to trace in line, color, and form the artistic physiognomy of a country recently fired to new effort yet ever mindful of its heroic heritage.

Very appropriately the frontispiece of the catalogue is a three-quarter photographic portrait of Vittorio Emanuele, King of Italy.

THE HENRY WARD RANGER FUND

Since the paintings purchased during the year by the council of the National Academy of Design from the fund provided by the Henry Ward Ranger bequest are, under certain conditions, prospective additions to the gallery collections, the list, including the names of the institutions to which they have been assigned, may be given in this place.

Since it is a provision of the Ranger bequest that paintings purchased from the fund and assigned to favored American art institutions may be reclaimed by the National Gallery during the 5-year period beginning 10 years after the death of the artist represented, it is appropriate that the death of Ben Foster, N. A., which occurred on January 28, 1926, should be noted.

Title	Artist	Date of purchase	Assignment
52. The Enchanted Pool	William Ritschel, N. A.	Mar. 28, 1926	The Minneapolis Society of Fine Arts, Minneapolis, Minn.
53. From a Window	Carl W. Peters	do	Witte Memorial Museum, San Antonio, Tex.
54. Spring	H. Bolton Jones, N. A.	do	Mills College, Oakland, Calif.
55. Passing By	E. Martin Hennings	do	Museum of Fine Arts of Houston, Tex.
56 Southaven Mill	W. Granville-Smith, N. A.	do	Toledo Museum of Art, Toledo Ohio.
57. Circe and Anatol	Robert Reid, N. A.	do	The Akron Institute, Akron, Ohio.
58. Cliffs of the Upper Colorado River, Wyoming Territory.	Thomas Moran, N. A.		Louisville Free Public Library, Louisville, Ky.
59. Days of Sunshine	William Wendt, A. N. A.		Malden Public Library, Malden, Mass.

The paintings purchased from the Ranger fund during the past fiscal year and unassigned at its close (1924–25) have subsequently been assigned as follows:

45. The Wood-Cart, by Louis Paul Dessar, N. A.; to the museum of the school of fine arts of Yale University, New Haven, Conn.
46. A Reading, by Thomas W. Dewing, N. A.; to the Cincinnati Museum Association, Cincinnati, Ohio.
47. Dawn, by Dwight W. Tryon, N. A.; to the Carnegie Institution, Pittsburgh, Pa.
48. The Prodigal Son, by Horatio N. Walker, N. A.; to the Buffalo Fine Arts Academy, Albright Art Gallery, Buffalo, N. Y.
49. Storm Birds, by Armin Hansen; to the Norfolk Society of Arts, Norfolk, Va.

50. Helen, by Jerry Farnsworth; to the Isaac Delgado Museum of Art, New Orleans, La.
51. Across the Valley, by Hobart Nichols, N. A.; the Des Moines Association of Fine Arts, Des Moines, Iowa.

ART WORKS ADDED DURING THE YEAR

Accessions of art works by the Smithsonian Institution, subject to transfer to the National Gallery on approval of the advisory committee of the Gallery Commission, are as follows:

Ten paintings, to be known as the George Buchanan Coale collection, 1819–1887:

Portrait of Thomas Hopkinson (1709–1751), attributed to Robert Feke.
Portrait of Mary Hopkinson (wife of Dr. John Morgan), by Benjamin West, 1764.
Portrait of Thomas McKean, Signer from Delaware, by Charles Willson Peale.
Portrait of Abigail Willing Coale (Philadelphia, 1809), by Thomas Sully.
Portrait of Jan Uytenbogaert, by Jan Van Nes (or Nees (1635)).
Self Portrait, by Thomas Vivien (1657–1735).
The Vintage, by A. R. Veron (1858).
The Continentals, by Frank B. Mayer (1875).
Sheep, by Balthasar Pauwel Ommeganck, Antwerp (1755–1826).
Flora, attributed to Beechy or Verbruggen.

Presented by Mrs. Mary Buchanan Redwood (Mrs. Francis T. Redwood), of Baltimore, Md.

Portrait of Rear Admiral Robley D. Evans, United States Navy, by August Franzen, N. A.; presented by Horatio S. Rubens, New York City.

Two portrait busts in marble by Moses W. Dykaar: Abraham Cahan, author and editor; and William H. Holmes, scientist and art director; presented by the sculptor.

Three paintings by Edward Moran (1829–1901): Riding Out a Gale, The Sea, and Life Saving Patrol; bequeathed to the United States National Museum by the late Mrs. Clara L. Tuckerman. Deposit.

LOANS ACCEPTED BY THE GALLERY

Noon, an oil painting, by Luigi Chialivi; lent by Mrs. Marietta Minnigerode Andrews, of Washington, D. C. Withdrawn before the close of the year.

Portraits of Dr. William Shippen, jr., and of Thomas Lee Shippen, by Gilbert Stuart; lent by Dr. L. P. Shippen, of Washington, D. C.

Six pieces of sculpture, by Moses Wainer Dykaar; lent by the sculptor. They are as follows:

Calvin Coolidge, President of the United States.
Mrs. Calvin Coolidge.
Dr. Alexander Graham Bell.

Justice W. P. Stafford.
Dr. Charles D. Walcott.
"The Modern Woman."

Portrait of Mrs. Sherman Flint, by Philip A. de Laszlo; lent by [rs. Sherman Flint, of Washington, D. C.

Sixteen examples of the works of old masters:

Portrait of a boy, Sir Henry Raeburn.
Portrait of Irish gentleman, John Hopner.
Portrait of Viscountess Hatton, Sir Peter Lely.
Portrait of a gentleman, Sir Godfrey Kneller.
Portrait of Judith von Volbergen, P. Moreelse.
Landscape (31 by 26), Richard Wilson.
Landscape (21 by 16), Gainsborough.
Small landscape (11 by 13) Gainsborough.
Landscape (12 by 21), Constable.
The Doctor's Visit, Jan Steen.
Scene in Venice (8 by 13), Guardi.
Portrait of Sir Wm. Boothby, Sir Joshua Reynolds.
Portrait of Mrs. Price, Sir Joshua Reynolds.
Portrait of woman, Drost or Vermeer.
Turkish scene, Diaz.
Grand Canal Venice, Canaletto.

Lent by Mrs. Marshall Langhorne, of Washington, D. C.

Five paintings by Old World masters and four by American ainters:

Portrait of Admiral Vernon, Thomas Gainsborough.
The Ford, J. B. C. Corot.
Garden at Giverny, Claude Monet.
Saskia as "Minerva," Rembrandt Van Rijn.
Children on the Beach, T. Sorolla.
Sunset, George Inness.
Olive Trees at Corfu, John Singer Sargent.
Portrait of Mrs. Samuel Miller, John Wesley Jarvis.
Portrait of Sarah Cresson, Thomas Sully.

Lent by Mrs. Breckinridge Long, of Washington, D. C.

Portrait bust in marble of Mrs. William C. Preston, by Hiram owers; lent by Mr. James Quentin Davis, of Durham, N. C., hrough Mrs. Anne Davis Thorn (Mrs. J. C. Thorn), of New York ity.

Portrait of Mrs. Charles Eames, by Gambadella; lent by Mrs. listair Gordon-Cumming.

Six oil paintings and a bas-relief in bronze lent by Miss Sarah edwood Lee, of Washington, D. C., as follows:

Madonna and Child, Francesco Bissolo.
Portrait of Mrs. Richard Eaton, Charles Willson Peale.
Spanish Interior, Juan Galves, 1598.
Holy Family, attributed to Francesco Francia.

Portrait, Man in a Red Coat, attributed to Thomas Hudson, master of Sir Joshua Reynolds.
Portrait, Man Holding a Lily, artist unknown.
Portrait, Sarah Redwood Lee (bronze bas-relief), Augustus Saint-Gaudens.

Portrait bust in plaster of the Hon. Frederick H. Gillett, Speaker of the House of Representatives, by Joseph Anthony Atchison; lent by the sculptor.

LOANS BY THE GALLERY

Two paintings, The Georgian Chair, by W. Gedney Bunce, and Musa Regina, by Henry Oliver Walker, were lent to the American Federation of Arts, to be sent out with paintings from other sources on an educational circuit under the auspices of the federation.

Twelve paintings, mostly from the William T. Evans collection, were lent to the American Federation of Arts for exhibition in Chattanooga, Tenn., February 15, 1926:

June (the Rose), John W. Alexander.
At Nature's Mirror, Ralph Albert Blakelock.
Birch Clad Hills, Ben Foster.
Portrait of Walter Shirlaw, Frank Duveneck.
An Interlude, Wm. Sergeant Kendall.
Moonrise at Ogunquit, Hobart Nichols.
Landscape, Chauncey Ryder.
November, Dwight W. Tryon.
The Cup of Death, Elihu Vedder.
Autumn at Arkville, Alexander Wyant.
Conway Hills, F. Ballard Williams.
The Island, Edward W. Redfield.

Five paintings (by members of the National Academy of Design) were lent to the academy for its centennial exhibition held at the Corcoran Gallery of Art, Washington, D. C., October 17 to November 15, 1925, and at the Grand Central Art Galleries, New York City, December 1, 1925, to January 3, 1926. These were:

The Lesson, Hugo Ballin.
Sunset, San Giorgio, W. Gedney Bunce.
The Siren, Louis Loeb.
Illusions, Henry B. Fuller.
The Monarch of the Farm, Wm. Henry Howe.

Three paintings, portraits of Field Marshal Haig and Marshal Joffre, by John C. Johansen, and portrait of Her Majesty Elizabeth, Queen of the Belgians, by M. Jean McLane (Mrs. J. C. Johansen), from the National Art Committee's collection of war portraits, were lent to the Corcoran Gallery of Art to form part of a joint exhibition of the works of these artists held in that gallery during the month of January.

DISTRIBUTIONS

Paintings lent to the gallery have been withdrawn by their owners during the year as follows:

Portrait of François Paul de Grasse de Rouville, Amiral Comte de Grasse, by Largilliere; portrait of Theodosius O. Fowler, by G. P. A. Healy; portrait of St. Bernard dog "Hero," by Benjamin West; withdrawn by Miss Silvie de Grasse Fowler.

Series of 13 historical marine paintings by Edward Moran, lent by Theodore Sutro, of New York City, were withdrawn by the trustees of Mr. Sutro, Frederick C. Sutro, Basking Ridge, N. J., Victor Sutro, New York City, and Paul E. Sutro, Philadelphia, Pa., for shipment to Los Angeles, Calif., as follows: The Ocean—The Highway of All Nations; Landing of Lief Ericson; the Santa Maria, Nina, and Pinta; the Debarkation of Columbus; Midnight Mass on the Mississippi; Henry Hudson Entering New York Bay; Embarkation of the Pilgrims from Southampton; First Recognition of the American Flag; Burning of the Frigate *Philadelphia;* the Brig *Armstrong* Engaging the British Fleet; Iron Versus Wood; the White Squadron's Farewell Salute to the Body of Capt. John Ericsson; Return of the Conquerors.

Noon, by Luigi Chialiva; withdrawn by Mrs. Marietta Minnigerode Andrews.

Mrs. Siddons in The Tragic Muse, copy by Rembrandt Peale of Sir Joshua Reynolds's celebrated painting, and Milton Dictating to His Daughter, by Rembrandt Peale; withdrawn by Mrs. John Biddle Porter.

Portrait of Franklin Pierce, by A. G. Powers; withdrawn by Mr Joseph Stewart.

Portrait of Admiral Thomas Holding Stevens, by Robert Hinckley; portrait of Mrs. Thomas Holding Stevens, by an unknown artist; portrait of Hon. Eben Sage, by Chester Harding; A Madonna, by Honario Marinari; and A Madonna, by Carlo Mahratta; withdrawn by Mrs. Pierre C. Stevens.

LIBRARY

The gallery library is steadily growing from a modest beginning in 1920 to upwards of 1,400 volumes and pamphlets, acquired by gift, exchange, and purchase. Notable accessions for the year were the gift of a large number of volumes from the library of the director, and of 11 bound and 29 unbound catalogues of notable art collections, by Dr. William Schaus.

PUBLICATIONS

Holmes, W. H. Catalogue of Collections, II, National Gallery of Art. Government Printing Office, 1926. 8vo, pp. i–vi, 1–118, 42 plates and 3 ground plans.

This is the second number of the catalogue series of the gallery which is to be issued from time to time as conditions warrant. It follows in general the form of Catalogue of Collections I, N. G. A., 1922, with additions of works received to date of printing. It contains an introduction by the director, giving a brief account of the development of the art interests of the Institution and an outline of the organization of the gallery. This is followed by a list of the art works acquired previous to November, 1925, with brief biographies of the artists.

——— Report on the National Gallery of Art for the year ending June 30, 1925. Appendix 2, Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1925, pp. 48–56.

Catalogue of an exhibition of early American paintings, miniatures, and silver, assembled by the Washington Loan Exhibition Committee, December 5, 1925–January 31, 1926, National Gallery of Art, Washington, D. C. Washington, 1925, pp. 1–107, plates 15, with introductions on early American portraits by Miss Leila Mechlin, Washington; early American miniatures by Mr. Albert Rosenthal, Philadelphia; and early American silver by Miss Elizabeth B. Benton, Boston.

Catalogue of a collection of busts of prominent personages in marble and bronze by Moses W. Dykaar, exhibited in the central room of the National Gallery, Natural History Building, United States National Museum, March 5 to 20, 1926. Washington, D. C., 1926, pp. 1–4.

Catalogue: Exhibition of modern Italian art under the patronage of His Majesty the King of Italy, organized by the Italian Ministry of Public Instruction. Introduction by Arduino Colasanti, director general of fine arts, Italy; foreword by Christian Brinton. Auspices of the Italy-America Society, Grand Central Art Galleries, New York, 1926. New York, 1926. 24 pp.; 34 illustrations.

Respectfully submitted.

W. H. Holmes, *Director.*

Dr. Charles D. Walcott,
Secretary, Smithsonian Institution.

APPENDIX 3

REPORT ON THE FREER GALLERY OF ART

SIR: I have the honor to submit the sixth annual report on the Freer Gallery of Art for the year ending June 30, 1926:

THE COLLECTION

The work continued during the year in the preservation of the collection includes the work upon 10 American oil paintings and the work of reconditioning the ceiling of the Peacock Room. Half of the latter work has been successfully completed at the date of this report. In the oriental section 2 Chinese panels, 3 Japanese screens, and 1 Chinese scroll have been remounted and restored.

Work within the collection has included the study of a considerable number of Japanese paintings, involving their proper classification and the translations of signatures, seals, and inscriptions found upon them. All this matter has been recorded in the folder sheets. Every object in the collection is represented by such a dossier, and the work of compilation goes forward from year to year. The collection of Near Eastern pottery has also undergone an intensive study and considerable revision.

Changes in exhibition during the year involved 9 Japanese screens, 7 Chinese panels, 2 Chinese scrolls, and 10 Persian potteries.

An addition to the collection of Chinese paintings is as follows:

26.1. Illustration to a Buddhist *sūtra:* The Buddha addressing Yamarāja at Kuśinagara. Ink, color and gold on paper. Sung Dynasty.

Additions to the library by gift and purchase include 500 volumes, of which 462 are in the Chinese and Japanese languages, 72 periodicals, and 142 pamphlets. A list of these accompanies this report as Appendix A (not printed).

The work of photographing objects for registration continues. In the meantime an increasing demand for photographs of objects in the collection has caused a rapid development of that part of the work. Five hundred and eighteen subjects are now available for purchase in sizes 5 by 7, 8 by 10, or 11 by 14, at cost price; 5 subjects are issued in post-card form to be sold at 10 cents each. During the past year 1,467 photographs, 28 lantern slides, and 115 post cards have been sold. Of the publications issued by the gallery, there have been sold during the year 698 copies of the descriptive pamphlet,

391 copies of gallery books, 449 copies of the Synopsis of History, and 3 floor plans of the building.

During the past year 76 objects have been submitted for examination and identification, and several Chinese and Japanese texts have been submitted for translation.

Repairs to the building during the year include work on the roof, the repointing of stonework at the entrance, the resetting of a stone architrave, and many minor repairs. A full report of shopwork accompanies this report as Appendix C (not printed).

ATTENDANCE

The gallery has been open every day, with the exception of Mondays, Christmas Day, and New Year's Day, from 9 until 4.30. The total attendance for the year was 108,310. The aggregate Sunday attendance was 30,372, making an average of 584; the weekday attendance amounted to 77,938, with an average of 249. Of these visitors, 342 came to the study rooms to see objects not on exhibition or to consult books in the library, 15 to make copies or photographs, 52 to examine the building or equipment, 32 to submit objects for information concerning them, 33 for general information, and 261 to examine photographs. Six groups varying in number from 20 to 148 made appointments for special study or instruction regarding the collections.

PERSONNEL

Miss Katharine N. Rhoades, associate, was granted leave of absence for a year, dating from October, 1925.

Mr. Herbert E. Thompson, Boston, worked on the preservation of oil paintings and the Peacock Room.

Mr. Y. Kinoshita of the Museum of Fine Arts, Boston, worked at the gallery during the winter months on the preservation of oriental paintings.

Mr. A. G. Wenley, field assistant, returned to the gallery in the spring of 1926 for a four months' stay before resuming field work.

FIELD WORK

Owing to disturbed conditions in China, archeological work in the field has been practically impossible. A detailed account of the activities of the field staff is contained in Appendix B submitted herewith (not printed).

Respectfully submitted.

J. E. Lodge, *Curator.*

Dr. Charles D. Walcott,
Secretary, Smithsonian Institution.

APPENDIX 4

REPORT ON THE BUREAU OF AMERICAN ETHNOLOGY

SIR: I have the honor to submit the following report on the researches, office work, and other activities of the Bureau of American Ethnology during the fiscal year ended June 30, 1926, conducted in accordance with the act of Congress approved April 22, 1925. The act referred to contains the following item:

> **American ethnology: For continuing ethnological researches among the American Indians and the natives of Hawaii, including the excavation and preservation of archeologic remains, under the direction of the Smithsonian Institution, including the necessary employees and the purchase of necessary books and periodicals, $57,160.**

In pursuance of the requirements for the excavation and preservation of ruins contained in the above item, considerable work has been done in the region near Flagstaff, Ariz. Arizona shows many evidences of a prehistoric aboriginal population and is a State particularly favorable to the study of prehistoric ruins. Thus far very few ruins have been excavated in northern Arizona and very scanty material has been obtained for a study of the objects illustrating the former culture of this region.

Research in this line was inaugurated by the bureau in 1907 at Casa Grande and has been continued in successive years at the Mesa Verde National Park, Colo. Formerly walls of ruins were destroyed in the search for small specimens, such as pottery, and thus work of great archeological value was lost. The method adopted by some institutions of burying the walls after objects have been extracted from the rooms, while intended as a means of preservation, is not satisfactory. The Bureau of American Ethnology, however, when the walls are not so mutilated that they can not be repaired, has endeavored to preserve them for future students.

SYSTEMATIC RESEARCHES

The chief of the bureau has headed an expedition to determine the western extension of the pueblo area in Arizona, where comparatively little attention had been given to the character of the sedentary life of the Indians in prehistoric times. This includes the region west of the Little Colorado River which is archeologically a terra incognita. The site chosen by the chief to be excavated is

situated about 6 miles from Flagstaff on the National Old Trails Highway. The work was begun on May 27 and was unfinished at the close of the fiscal year.

As a result of this excavation there has emerged from the ground near Elden Mountain a rectangular building measuring 145 by 125 feet, containing nearly 40 rooms and a large kiva, from a study of which a good idea can be obtained of the aboriginal architecture of this neighborhood. The building was a compact community house in places two stories high, whose upper walls, judging from the amount of stones found in the rooms, were formerly 4 or 5 feet higher than at present. No walls were visible when the work began, but since the earth has been removed, they rise to a height of 4 to 10 feet.

The rooms are comparatively large and compactly united without any visible outside entrances, being formerly entered by ladders and a hatchway in the roof. No windows or lateral doorways are visible in the walls now standing. In order to protect this large building from the elements its walls have been repaired where necessary and their tops covered with Portland cement to prevent erosion.

The most striking result of the work has been the accumulation of a large collection of characteristic pottery from the two cemeteries which were discovered a short distance from the northern and eastern walls and which extended over a considerable area, but never very distant from the pueblo itself. A number of skeletons were found, some of which were nearly perfect, others more or less fragmentary. Several of these skeletons have been brought back for the study of specialists. They appear to have artificially deformed skulls. There was no common orientation, although a majority were interred with heads to the east.

The distinction of the kinds of pottery would naturally be reserved for a more complete report which will appear later. As a rule, however, the number of varieties was rather limited and there were very few intrusions from outside, all of which goes to show the ancient character of the ruin and the isolation of its people from others in the Southwest. The typical specimens of pottery may be grouped under a few characteristic types. Perhaps the most abundant is colored dull red on the exterior with glossy black interior. The exterior surface is corrugated or smooth. From its abundance this type may be known as the Flagstaff ware. It is never decorated with painted designs. A more striking type is white with black decorations, mainly geometrical figures, which is widely distributed in Arizona. There occur also a few specimens of red ware with black interiors, which bear indubitable evidence of having been derived from the settlements on the banks of the Little Colorado or near Tuba City.

The forms of the Elden Pueblo pottery are food bowls, ladles, dippers, vases, mugs, and ollas. Several very characteristic pieces of the black and white ware are effigy forms. There occur remarkable bracelets made of clamshell (*Pectunculus*), with incised ornamentation, from the Pacific coast, and there are ornamented bone objects which may be mentioned among the rare specimens. Turquoise beads and shells, which when strung formed strands of a necklace several feet in length, were sifted out of the soil found near the necks of skeletons. There were undoubted examples of shells set with turquoise mosaics, but they were more or less damaged by long presence in the ground. Stone implements were excavated more commonly in the rooms of the building, and there were several different forms of paint grinders, which enrich the collection. There is nowhere a larger or better collection from Arizona than that excavated from Elden Pueblo.

One of the most significant discoveries at Elden Pueblo was a room called the kiva or ceremonial chamber about midway in the length of the ruin on its east side. The kiva has thus far not been described from the Flagstaff area and its existence has been denied in the ruins of this area.

The kiva of Elden Pueblo is very large and rectangular in form with round corners. It is partly subterranean and has a banquette extending wholly around the wall of the room, but no pilasters. It also has a ventilator opening externally in the east wall, peculiarities which occur in the ruins at Marsh Pass and elsewhere in northern Arizona. It thus appears that the legend of the modern Hopi that certain of the Hopi clans formerly lived on the San Juan and its tributaries is not fanciful, but that what they recount of the southern migration of these clans before they settled on their present mesas is supported by archeological evidences in architecture as well as ceramics.

Several Hopi visitors retold their legends, published by the chief many years ago, that the ruins under Mount Elden were settlements of the Hopi in their ancient migrations, and as far as it goes the archeology of Elden Pueblo supports these legends which are sometimes very vague, differing somewhat in minor particulars. These legends differ in the names of the Hopi clans that lived at Elden Pueblo, but the Snake, Badger, and Patki are all mentioned as former inhabitants.

The particular claim of this pueblo for popular consideration is that it is easily accessible and not far from the city of Flagstaff. It bids fair to be visited in the future by many tourists who now pass through northern Arizona to visit its attractions, such as the Grand Canyon and the great bridges, and to attend the ceremonial survivals of the ancient religious rites of the Hopi. The number

of visitors to Elden Pueblo during its excavation was very large and consisted not only of a large number of residents of Flagstaff but also of tourists from distant States.

Before commencing the archeological work, the chief assisted by Mr. John P. Harrington, ethnologist, cooperated with Mr. J. O. Prescott, of the Starr Piano Co., Richmond, Ind., in the recording of some of Hopi songs. Through the kindness of the Office of Indian Affairs, four of the older Hopi were brought from Walpi to the Grand Canyon, where 11 katcina songs were recorded. It was particularly fitting that the records were made at the Grand Canyon, as it holds such a prominent position in Hopi mythology.

The chief was also assisted in the archeological work by Mr. Harrington and by Mr. Anthony W. Wilding, stenographer. Their assistance was invaluable and did much to make the field work a success.

During the past year, the bureau has had in the field a larger number of investigators than in any previous year during the last decade. Field-work has been done in various parts of our country, from Alaska to Florida, and although the line of research has in some instances been more or less limited in its nature, the total results have brought into the office much new data regarding the Indian life and a larger number of specimens illustrative of it than has resulted from field-work in comparatively recent years.

It is recognized by the chief that the time that can be devoted to rescuing data regarding the life and habits of the American Indians is more or less restricted; that is, Indian culture is rapidly fading away and is doomed in a short time to utter extinction. While this is true of ethnological data it is not necessarily true of archeological material. In fact the antiquities of our country belonging to the past of the Indian are yearly attracting more and more attention, and in order to keep pace with this interest the bureau has chosen to represent it in the field a considerable proportion of archeological problems.

At the beginning of the fiscal year, Mr. J. N. B. Hewitt, ethnologist, took up anew the work of transliterating, amending, and translating the Chippewa text of The Myth of the Daymaker, by Mr. George Gabaoosa, and also that of an Ottawa version of a portion of the Nanabozho cycle of myths by John L. Miscogeon.

In October Mr. Hewitt began the work of reclassifying and recataloguing the linguistic, historical, and other ethnological manuscripts in the archives of the bureau. In this work he was assisted by Miss Mae W. Tucker. The card index consists of 2,924 items, with approximately 6,150 cross-reference cards.

During the fiscal year Dr. John R. Swanton, ethnologist, made final additions to his papers on the Social Organization and Social

Usages of the Indians of the Creek Confederacy, Religious Beliefs and Medical Practices of the Creek Indians, and The Culture of the Southeast. These papers are now going through the press. He has also finished the scientific editing of a paper on the Trails of the Southeast, by the late William E. Myer, which, with those just mentioned, is to appear in the Forty-second Annual Report.

With the help of Miss Mae W. Tucker, stenographer, Doctor Swanton made a considerable advance in compiling a card catalogue of the words of the Timucua language previously extracted from missionary publications of the Spanish fathers Pareja and Movilla.

Doctor Swanton also continued his investigations bearing on the aboriginal trail system of North America.

Dr. Truman Michelson, ethnologist, continued his researches among the Algonquian Indians of Iowa, concentrating on the gens festivals of the Fox Indians, especially those of the Thunder and Bear gentes. He also revised in the field the list of Fox stems incorporated in the Fortieth Annual Report of the bureau. In August he went to Odanah, Wis., to gain further first-hand information on the Ojibwa Indians and enough material was secured to show decided dialectic differences from the western Ojibwa dialects. The social organization of the Ojibwa is relatively simple as compared with that of the Foxes, and the various gentes lack rituals peculiar to themselves, in sharp contrast with Fox customs. At Baraga and L'Anse, Mich., Doctor Michelson located one Stockbridge (Mahican) family in the vicinity, but unfortunately none spoke their native language. The Ojibwa dialect, though not identical with that spoken at Odanah, is closely allied to it. He also made a preliminary survey of the Ojibwa, Ottawa, and Potawatomi, finding that the various languages still persist and that their ethnology is better preserved than might be expected.

Doctor Michelson returned to Washington on September 19, when he prepared for publication by the bureau two papers on sacred packs of the Fox Indians and their appurtenant gens festivals, one called A'penäwänä'A' belonging to the Thunder gens; the other Sägimä'kwäwA belonging to the Bear gens. Doctor Michelson also completed typewriting the English translation and Indian text of a Fox sacred pack belonging to the Thunder gens formerly in possession of Pyätwäyä. A fuller text than this on Pyätwäyä's pack, written in the current syllabary, was restored phonetically, as was an Indian text on the Thunder Dance of the Bear gens, a complete version having been worked out previously, and a fuller redaction was obtained.

Mr. J. P. Harrington, ethnologist, was engaged during the fiscal year in the important work of rescuing what can still be learned of the vanishing culture of the Mission Indians of California. Work

was continued at ruined village sites of the Santa Ines, Ojai, and Simi Valleys and at several of these sites extensive excavations were made revealing an earlier and later coast Indian culture. Pictographs were discovered and photographed; also many rocks who were "first people" petrified, and figure in Indian legends still extant. Spirit footprints on the rocks, both of moccasined and bare feet, made by these "first people" when the earth was still soft and muddy, were found at several places and photographed. At San Marcos the bowlders on a hillside represent the warriors of a mythic battle; some are standing with the blood from wounds running down their sides, seen as stains on the rock. A curious medicine rock was also visited, the size of a man and standing erect and surrounded at least at the present time by a bunch of opuntia cactus which keeps the curious at a respectful distance. At Rincon were photographed a couple of tall bowlders which stand six feet apart. To have good luck in hunting, so that one would be able to jump successfully among the rocks in the mountains, it was the custom for Indian boys to spring from one to the other of these bowlders. They also were called "medicine."

Mr. Harrington also discovered at Rincon the ruins of a medicine house formerly used by the island wizards for secret ceremonies. An enormous bowlder is supported on several rocks forming a natural cave, still smudged on the interior by the smoke of ancient fires. In front of this chamber on the east is a circular corral or parapet 18 feet in diameter and rising to a height of 3 feet. From the top of this stone wall rafters had formerly extended to the roof of the cave chamber, and on these thatch had been placed. It is believed by the Indians that if a person comes upon this place by mistake, thunder, lightning, and rain will immediately result.

The construction of a Mission Indian house by one of the few survivors who still know how to make them was next attempted under the direction of Mr. Harrington, and an excellent series of photographs was obtained, showing the house in all the successive stages of building. The jacal is slightly elliptical in shape, with the door, less than 4 feet high, at one end. Door leaves, both of woven tules and of jarilla, were constructed. The diameter of the structure is 13 feet, and it is only 7 feet high, with an unduly ample smokehole at the top.

Post holes a step apart and the same distance in depth were dug with a short bar of willow, the earth being scooped out with the hand. Tall and slender willow poles were selected with the greatest care from a place where the growth was thick. These poles were burnt down. Eight of them were first erected in the post holes, forming a Greek cross. Opposite pairs of poles were then arched and lashed together with yucca tyings. Only after the complete

framework of uprights had been constructed were the "latas" or horizontals lashed on at intervals of a foot apart. On these a thick thatching of deerbrush was sewed, the bottom layer being stem down but all the higher layers tip down, the inverted leaves better shedding the water. The sewing was done with yucca shreds, using a great needle of wood called "raton" in Spanish, which is poked through the thatch; the sewing was performed by two Indian workers, one outside and one inside.

An expedition to the Cañada de las Uvas proved rich in discovery along several different lines. At several of the sites the old hut circles could still be traced on the surface of the ground and proved that our recently constructed house was about normal size. The old fireplaces in the center were also discovered.

Special attention was given by Mr. Harrington to the site of the old rancheria of Misyahu. This place resembles a giant citadel when viewed from down canyon. A great rocky hill was completely covered with wigwams, 12 to even 20 feet in diameter. At the base of the cliff a strong flowing spring bursts forth from an otherwise dry arroyo, 75 feet below the Indian city. It was discovered that the Misyahu cemetery has unfortunately been washed away by the freshets of the arroyo. Choriy village was located, also Sikutip, a mile distant. Four large springs with pictographs traced on their rocky walls were located in the vicinity of Choriy. At Sikutip the Indian huts were formerly clustered at the southwest border of the cienega.

In May Mr. Harrington proceeded to Flagstaff, Ariz., where he assisted in bringing four Hopi singers to the Grand Canyon for the purpose of recording their songs. At Flagstaff Mr. Harrington also assisted the chief in the excavation of the Elden Pueblo ruin.

During the fiscal year Dr. Francis La Flesche, ethnologist, was engaged in classifying the personal names of the full-blood members of the Osage Tribe according to their places in the various gentes that comprise the tribe. Each name refers, cryptically, to the origin story of the gens to which it belongs. Thus the name Star-radiant is itself meaningless until some one who is versed in the tribal rites explains that it refers to the story of the people who, when they came from the blue sky to earth, came suddenly upon a stranger whose dignified appearance and bearing immediately struck them with awe and reverence. When the people asked "Who art thou?" the stranger replied, "I am Star-radiant, who has brought for you from the starry regions peace and brotherly love." This and other star names belong to the Wa-tse-tzi (people of the stars) gens, in whose keeping are the House of Refuge and the Fireplace of Peace. The meaning of the name Pi-si (Acorn) is also obscure until it is explained that it points to the story of the people of the Tsi-zhu gens

and subgentes, who when they came from the sky to the earth, alighted upon seven red oak trees. The alighting of the people on the tops of the trees sent down showers of acorns, and a voice spoke, saying, "Your little ones shall be as numerous as the acorns that fall from these trees." About 1,991 gentile names have been recorded, covering 83 pages. The translations of the names are yet to be made.

Doctor La Flesche also spent three weeks assisting Mr. De Lancey Gill, illustrator, in classifying negatives of photographs of Ponca, Omaha, and Osage Indians.

A vocabulary of the Osage language has also been started by Doctor La Flesche and Dr. John R. Swanton. So far some 3,000 or more words have been recorded with translations.

SPECIAL RESEARCHES

The research in Indian music by Miss Frances Densmore during this fiscal year has been marked by the collecting and developing of extensive material among the Menominee of Wisconsin, and the completion of the book on Papago music which is now ready for publication. The proof of the book on The Music of the Tule Indians of Panama was read, and the text of Pawnee Music (apart from analyses) was retyped, putting it in final form.

The titles of the manuscripts furnished to the bureau during the fiscal year are as follows: "Songs connected with ceremonial games and adoption dances of the Menominee Indians," "Menominee songs connected with hunting bundles, war bundles and the moccasin game," "Menominee songs connected with a boy's fast, also dream songs, love songs, and flute melodies," "Dream dance songs of the Menominee Indians," "Songs used in the treatment of the sick by Menominee Indians," and "Menominee war songs and other songs."

The Menominee Indians have been in contact with civilization for many years but retain their old customs to a remarkable degree. Miss Densmore attended a meeting of their Medicine Lodge (corresponding to the Chippewa Grand Medicine), at which two persons were initiated. She witnessed the ceremony for about four hours, listening to the songs, and presented tobacco which was received in a ceremonial manner. She was also present at a gathering where a lacrosse game was played "in fulfilment of a dream," and witnessed the similar playing of a "dice and bowl" game by a woman who had dreamed of the "four spirit women in the east" and been instructed by them to play the game once each year.

The songs of the Dream Dance received extended consideration, the dance having been witnessed in 1910.

Among the interesting war songs were those connected with the enlistment and service of Menominee in the Civil War, with the

songs of the charms ("fetiches") by which they believed that they were protected. Songs of the warfare against Black Hawk were obtained, and one very old war song with the words "The Queen (of England) wants us to fight against her enemies."

Mr. Gerard Fowke, special archeologist, was engaged for three months, February to April, in making a survey and explorations of a group of aboriginal remains near Marksville, La. The works consisted of 3 enclosures, 20 mounds, 8 lodge sites, and several village sites, extending a distance of 2 miles along the bluff overlooking Old River and in the bottom land bordering that watercourse. Eight of the mounds are of the flat-topped, domiciliary type; the others are conical or dome-shaped, usually classed as burial mounds. Six of the last were fully excavated. Two of them contained evidence of many interments; two were house sites indicating at least three periods of construction; the remaining two yielded nothing that would show the reason for their building. All were singularly barren of contents. Only traces of bones were found in the graves. The manner of construction of these mounds and the methods of burial were of a character which differentiates them from any others that have so far been reported to the bureau. They do not seem to belong with those to the east of the Mississippi, or with those which are so numerous to the westward.

A full report, with map and illustrations, has been prepared.

During the months of April, May, and June, Mr. H. W. Krieger, curator of ethnology of the National Museum, was detailed to engage in field work for the Bureau of American Ethnology. He was authorized by the chief of the bureau to proceed to Walla Walla, Wash., and vicinity for the purpose of studying the archeology of the upper Columbia River Valley, thence to proceed to southeastern Alaska to undertake the restoration of Old Kasaan, a national monument on Prince of Wales Island.

A careful inspection was made of the various collections of archeological material gathered by members of the Columbia River Archeological Society at Walla Walla, Wenatchee, Quincy, and other points in the State of Washington.

Accompanied by Mr. H. T. Harding, a local archeologist, who had spent over 20 years in archeological investigations along the upper Columbia, a reconnaissance was undertaken from The Dalles, in Oregon, to Wenatchee, Wash., for the purpose of plotting a map of the known archeological sites and selecting likely stations for excavation. The old Indian camp site at Wahluke Ferry, located at the extreme southern extent of the big bend of the Columbia, was selected as the most promising. There were no traces of previous disturbance by curio hunters. The ruins of the old Indian camp site and the cemetery near by yielded several hundred objects, most

of which had been placed in the group burials as ceremonial offerings accompanying the cremation form of burial. No objects were found in the more deeply-placed graves where no cremation practices had been observed.

The restoration of the national monument of Old Kasaan, southeast Alaska, has long been the ambition of the chief of the bureau, but conditions at this unique old Haida village were found to be very discouraging. Rainfall reaches a total of 235 days annually at the town of Ketchikan on Revillagigedo Island near by, and the process of rotting and disintegration is practically continuous throughout the year. Many of the fine old carvings on the totem poles and memorial columns still standing are either partially or entirely obliterated, and every house in the village has either fallen into decay or was burned in the recent fire which destroyed the major portion of the village. The house ("big doings") and the totem pole erected by the former Haida chief Skay-al were among the objects consumed in this fire.

Several of the house sites at Old Kasaan, Tongass, Village Island, and Cape Fox village were excavated in an attempt to determine the relative age of the settlements of extreme southeastern Alaska. But few objects were obtained which might indicate a culture older than the Hudson Bay Co. post at Fort Simpson, British Columbia, or the Russian settlement at Sitka, Alaska, on the north. The few poles worthy of restoration at Old Kasaan were scraped and rotted wood was removed. The tall alder brush was cut from the immediate vicinity of the poles. Information relative to house, totem, and place names was obtained from a few survivors of the old village still living either at Wrangell, Ketchikan, or at the recently established Indian village of New Kasaan, about 40 miles from the old abandoned village.

Upon returning to the United States, the task of completing the map of archeological sites on the upper Columbia River to the Canadian border was completed. Excavation was undertaken at eight different stations along the river between Wenatchee, Wash., and the mouth of the Okanagan River.

Mr. Henry B. Collins, jr., assistant curator of ethnology of the National Museum, was detailed by the bureau to carry on archeological work in southern Louisiana and Mississippi, a region in which scarcely any work of this nature had previously been done. A reconnaissance of the field was begun in April, first in southern Mississippi, where a number of mounds were examined, and then along the low-lying Gulf coast of Louisiana. Many earth mounds and shell heaps were found throughout this latter region, indicating the existence there in prehistoric times of an advanced culture of fairly uniform type. Particular attention was given to the 21

mounds on Pecan Island in the lower part of Vermillion Parish. This part of Louisiana was occupied in historic times by the Attacapa, a cannibalistic tribe of comparatively low culture. The builders of the Pecan Island mounds, however, were apparently not Attacapa but an earlier and more advanced people who made an excellent type of pottery and who were skilled workers in stone, shell, and bone. The presence in these Pecan Island mounds of native copper and galena, as well as slate and other kinds of stone not native to the section, indicates that at a very early date the Indians of lower Louisiana had trade relations with other tribes to the north and east. In addition to the cultural material collected a number of undeformed skulls were obtained from Pecan Island, and these will be of particular value since skeletal material from Louisiana is scarce.

Upon completion of the work in Louisiana in the latter part of June Mr. Collins proceeded to eastern Mississippi and located the sites of several of the historic Choctaw villages and secured physical measurements on 72 living Choctaw in the vicinity of Philadelphia, Miss. The latter phase of the work was in continuation of similar studies on the Choctaw begun in the summer of 1925, and was made possible by an appropriation from the American Association for the Advancement of Science.

Dr. J. W. Gidley, assistant curator of vertebrate paleontology in the National Museum, was detailed to the bureau for a continuation of work begun in the summer in conjunction with Amherst College, in exploring the fossil beds in the vicinity of Melbourne and Vero, Fla., for fossil bones and possible human remains. Mr. C. Wythe Cook, of the United States Geological Survey, aided Doctor Gidley in a determination of the geologic formation of the bed. Most of the work of this exepdition was to verify the geological observations of the previous expedition and to obtain if possible more evidence on the subject. More than 100 specimens of fossil bones were added to the collection and some new forms were represented, the most important of which were fossil remains of a large extinct jaguar and teeth of an extinct species of Termarctos, a genus of bear living now in South America and having never been found before in North America. Several Indian mounds were visited and examined, a survey was taken of the Grant Mound 14 miles south of Melbourne, and a plot made of the general structure of the shell heap, burial mound, and connecting ridges. Doctor Gidley also visited some mounds near Sarasota that had been reported to the bureau, but found that they had been dug into by curio hunters. He also examined the region at Lake Thonotosassa, 14 miles northeast of Tampa. Here he secured a few Indian artifacts that had been picked by Mr. Samuel Conant. Mr. Conant also guided Doctor Gidley to an ancient work-

shop which covers several acres and seemed to be a very favorable location for future investigation.

Dr. Aleš Hrdlička, curator of physical anthropology in the National Museum, was detailed to the bureau and sent to Alaska in May for the purpose of studying the archeology of Seward Peninsula in the vicinity of Nome. As he did not reach the site of his work until the close of the fiscal year, a consideration of the results of his expedition is reserved until next year.

EDITORIAL WORK AND PUBLICATIONS

The editing of the publications of the bureau was continued through the year by Mr. Stanley Searles, editor, assisted by Mrs. Frances S. Nichols, editorial assistant. The status of the publications is presented in the following summary:

PUBLICATIONS ISSUED

Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox Indian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society Known as "Those Who Worship the Little Spotted Buffalo"; The Traditional Origin of the Fox Society Known as "The Singing Around Rite," by Truman Michelson. 664 pp., 1 pl., 1 fig.

PUBLICATIONS IN PRESS OR IN PREPARATION

Forty-first Annual Report. Accompanying papers: Coiled Basketry in British Columbia and Surrounding Region (Boas, assisted by Haeberlin, Roberts, and Teit); Two Prehistoric Villages in Middle Tennessee (Myer).

Forty-second Annual Report. Accompanying papers: Social Organization and Social Usages of the Indians of the Creek Confederacy; Religious Beliefs and Medical Practices of the Creek Indians; The Culture of the Southeast (Swanton); Indian Trails of the Southeast (Myer).

Bulletin 82. Archeological Observations North of the Rio Colorado (Judd).

Bulletin 83. Burials of the Algonquian, Siouan, and Caddoan Tribes West of the Mississippi (Bushnell).

Bulletin 84. The Language of the Kiowa Indians (Harrington).

DISTRIBUTION OF PUBLICATIONS

The distribution of the publications of the bureau has been continued under the immediate charge of Miss Helen Munroe, assisted by Miss Emma B. Powers. Publications were distributed as follows:

Report volumes and separates	5,729
Bulletins and separates	6,582
Contributions to North American ethnology	33
Introductions	12
Miscellaneous publications	637
	12,993

As compared with the fiscal year ended June 30, 1925, there was an increase of 5,639 publications distributed. This was due partly

to the fact that more publications were issued by the bureau than in the previous year, and partly to an increase in demand for the works.

Five addresses were added to the mailing list during the year and 37 taken from the list, making a net decrease of 32. The list now stands at 1,738.

ILLUSTRATIONS

Mr. DeLancey Gill, illustrator, continued the preparation of the illustrations of the bureau. A summary of the work follows:

Negatives of ethnologic and archeologic subjects	34
Negative films from field exposures	15
Portrait negatives of Indians	5
Photographic prints	466
Drawings prepared for book illustrations	41
Illustrations prepared for engraving (Bureau American Ethnology)	567
Illustrations prepared for engraving (other Smithsonian Institution bureaus)	681
Engravers' proof read	635
Edition prints of colored plates examined at Government Printing Office	17,000

On the 1st of February, 1926, the services of a photographer were discontinued and the work was taken over by the photographer of the Smithsonian Institution in cooperation with the Bureau of American Ethnology.

LIBRARY

The reference library has continued under the immediate care of Miss Ella Leary, librarian, assisted by Mr. Thomas Blackwell. During the year 560 volumes were accessioned, and 200 pamphlets were received and catalogued; also 2,992 serials, chiefly the publications of learned societies, were received and recorded. Of these 155 were acquired by purchase, 207 by binding of periodicals, and the remainder through gift and exchange. The library now contains 26,661 volumes, 15,712 pamphlets, and several thousand unbound periodicals. During the year there were sent to the bindery 207 volumes. In addition to the use of its own library, which is becoming more and more valuable through exchange and by limited purchase, it was found necessary to draw on the Library of Congress for the loan of about 200 volumes. The purchase of books and periodicals has been restricted to such as relate to the bureau's researches. Although maintained primarily as a reference library for the bureau staff its value is becoming better known to students not connected with the Smithsonian Institution who make frequent use of it. During the year the library was used also by officers of the executive

departments and the Library of Congress. The library is greatly indebted to many private individuals for numerous donations of publications. Mention may be made of a collection given by Mrs. Safford, consisting of 50 books and one manuscript belonging to her husband, the late Dr. W. E. Safford.

During the year the cataloguing has been carried on as new accessions were acquired and good progress was made in cataloguing ethnologic and related articles in the earlier serials.

The library, among other representative libraries, is cooperating with the Library of Congress in checking up the Union List of Serials of the United States and Canada, compiled by the H. W. Wilson Co. This necessitates the checking up of the entire collection of periodicals.

COLLECTIONS

88232. Two plaster casts made by Mr. Egberts of an amulet sent to the bureau for identification by W. W. C. Dunlop, Codrington College, Barbados, British West Indies.

90380. Two chert rejects, four potsherds, and one small arrow point found in a gravel pit about one-half mile west of the Grand River, near Prior, Okla., and presented to the bureau by Grant Foreman.

90604. Archeological and skeletal material collected by H. B. Collins, jr., at various localities in Mississippi during 1925. (78 specimens.)

90652. Collection of 44 archeological specimens from graves at Vantage Ferry, Wash., purchased by the bureau from Earle O. Roberts.

90813. Collection of eight stone and shell implements found by Charles T. Earle on the beach at Shaws Point, Fla., and presented by him to the bureau.

91825. Collection of about 19 lots of human skeletal material collected in Florida by Dr. J. W. Gidley.

92317. Archeological specimens collected in Louisiana by Gerard Fowke. (108 specimens.)

PROPERTY

Furniture and office equipment were purchased to the amount of $750.

MISCELLANEOUS

Clerical.—The correspondence and other clerical work of the office has been conducted by Miss May S. Clark, clerk to the chief, assisted by Mr. Anthony W. Wilding, stenographer. On May 15, Mr. Wilding accompanied the chief to the field, acting as general assistant. Miss Mae W. Tucker, stenographer, was engaged in assisting Dr. John R. Swanton in compiling a Timucua dictionary and in assisting Mr. Hewitt in reclassifying and recataloguing the manuscripts in the bureau archives. Mrs. Frances S. Nichols assisted the editor.

Personnel.—Mr. James E. Connor, who received a temporary appointment as minor clerk February 4 to assist in the cataloguing of the archives of the bureau, was dropped from the rolls June 15, there being no further need for his services.

Mr. Gerard Fowke was given a temporary appointment as special archeologist in the bureau from February 9 to June 30.

Mr. Albert E. Sweeney, photographer, resigned January 31.

Respectfully submitted.

J. WALTER FEWKES, *Chief.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 5

REPORT ON THE INTERNATIONAL EXCHANGES

SIR: I have the honor to submit the following report on the operations of the International Exchange Service during the fiscal year ending June 30, 1926:

The appropriation granted by Congress for the support of the service during the year was $46,260. While this amount is $3,290 less than the appropriation for the fiscal year 1925, the actual money available for the running of the service for 1926 was the same as that for 1925, the salaries of two of the personnel that were carried on the exchange roll during 1925 having been transferred to other appropriations. In addition to the above appropriation, an allotment of $300 for printing and binding was allowed. The repayments from departmental and other establishments aggregated $4,883.75, making the total resources available for carrying on the system of exchanges during the year, $51,143.75

The total number of packages handled in 1926 was 480,776, an increase over the number for the preceding year of 12,045. The weight of these packages was 558,493 pounds, a gain of 52,329 pounds. For statistical purposes the packages handled by the exchange service are divided into several classes. The number and weight of the packages in these classes are given in the following table:

	Packages		Weight	
	Sent	Received	Sent	Received
			Pounds	*Pounds*
United States parliamentary documents sent abroad	193,598		99,601	
Publications received in return for parliamentary documents		5,169		20,626
United States departmental documents sent abroad	145,912		156,836	
Publications received in return for departmental documents		6,280		26,703
Miscellaneous scientific and literary publications sent abroad	97,483		185,170	
Miscellaneous scientific and literary publications received from abroad for distribution in the United States		32,334		69,557
Total	436,993	43,783	441,607	116,886
Grand total	480,776		558,493	

A comparison of the figures given in the above table with those in the report for last year will show a substantial gain in the number

of packages received from abroad. This is gratifying, because the packages received from abroad have always been fewer in number than those sent; although, as referred to in previous reports, this disparity is not so great as would appear, for many foreign publications reach correspondents in this country direct by mail and not through exchange channels.

On account of many complaints of delay in the distribution of packages sent to China through the American-Chinese publication exchange department of the Shanghai Bureau of Foreign Affairs, shipments to that country were suspended May 18, 1925. In December, 1925, all packages on hand for China were forwarded to the Zi-ka-wei Observatory near Shanghai, the director of that observatory, Rev. Father L. Froc, S. J., having kindly signified his willingness to undertake their distribution. The Zi-ka-wei Observatory, it might be added, acted as the Smithsonian exchange agency in China before the work was taken over by the Shanghai Bureau of Foreign Affairs. The Government of the Chinese Republic recently adhered to the Brussels Exchange Conventions of 1886 and organized a Bureau of International Exchange of Publications as a department of the Ministry of Education in Peking. The first consignment of exchanges to this newly established bureau was forwarded May 4, 1926.

During the year 2,521 boxes were used in forwarding exchanges to foreign agencies for distribution—an increase of 196 over the number for the preceding 12 months. Of the total number of boxes shipped abroad, 389 were for the foreign depositories of full sets of United States governmental documents and the remainder (2,132) included departmental and other publications for depositories of partial sets and for miscellaneous correspondents.

As was stated in the report for 1925, the Smithsonian exchange service, as a rule, forwards its consignments to other countries in boxes, but sometimes the packages that accumulate for a particular country are not of sufficient bulk to warrant their transmission by freight, this latter material being mailed directly to its destination. In addition, a number of packages are forwarded by mail to remote places which can not be reached through existing exchange channels. During the year the number of packages sent abroad in this manner was 49,087.

The number of boxes sent to each country is given in the following table:

Country	Number of boxes	Country	Number of boxes
Argentine Republic	55	Java	1
Austria	73	Latvia	6
Belgium	60	Mexico	7
Brazil	41	Netherlands	80
British Colonies	16	New South Wales	35
British Guiana	2	New Zealand	27
Bulgaria	4	Norway	43
Canada	28	Palestine	60
Chile	26	Peru	15
China	54	Poland	34
Colombia	16	Portugal	14
Costa Rica	11	Queensland	16
Cuba	7	Roumania	10
Czechoslovakia	57	Russia	67
Danzig	5	South Australia	15
Denmark	45	Spain	29
Ecuador	2	Sweden	91
Egypt	2	Switzerland	67
Esthonia	25	Syria	4
Finland	20	Tasmania	17
France	190	Turkey	44
Germany	372	Union of South Africa	36
Great Britain and Ireland	314	Uruguay	14
Greece	12	Venezuela	9
Haiti	2	Victoria	42
Hungary	46	Western Australia	18
India	48	Yugoslavia	14
Italy	92		
Japan	79	Total	2,521

FOREIGN DEPOSITORIES OF UNITED STATES GOVERNMENTAL DOCUMENTS

In last year's report the statement was made that 18 countries had joined the exchange conventions of 1886. Notification was received through diplomatic channels that China had adhered to both conventions in December, 1925. It should be added that China is the first country to take this action since the question of having a larger number of countries join those conventions was taken up at Geneva in the summer of 1924 by the committee on intellectual cooperation of the League of Nations.

The depository in China has been changed from the American Chinese Publication Exchange Department in Shanghai to the Metropolitan Library in Peking. During the year depositories of partial sets have been established in Iceland and the Dominican Republic. In the former the name of the depository is National Library, Reykjavik, and in the latter, Biblioteca del Senado, Santo Domingo.

Several of the depositories have asked that steps be taken to have the publications forming the regular series of governmental documents delivered more promptly in order that the information con-

tained therein may be available for use as soon after publication as practicable.

The publications forming the full series, therefore, instead of being held three months until a sufficient number accumulates to fill a large packing box, will be shipped in small boxes at monthly intervals. Furthermore, arrangements have been made with the Public Printer to have the publications supplied either in paper covers or departmental binding instead of withholding them to be bound as a part of the special congressional series, this latter practice often delaying the delivery of the documents to the Institution for many months. Several letters of appreciation of this action on the part of the Institution have been received. As an example of the tone of those letters there is quoted below a portion of one received from the Library of the League of Nations at Geneva:

I am very glad indeed that steps have been taken to expedite the delivery of these documents. They are of the greatest value to us, and it is important for us to get them as soon as possible after issue.

The following references to certain resolutions and acts of Congress concerning the International Exchange Service are made here as a matter of record:

Resolution approved March 2, 1867 (Stat. XIV, 573), setting aside 50 copies of each United States official document for exchange with foreign governments through the agency of the Smithsonian Institution.

Printing act approved March 2, 1901 (Stat. XXXI, 1464), increasing to 100 the number of copies of documents for the use of the Library of Congress and for international exchanges, this number being increased to 125 by act of March 3, 1925 (Stat. XLIII, 1106).

Resolution approved March 4, 1909 (Stat. XXXV, 1169), setting aside 100 copies of the daily issue of the Congressional Record for exchange, through the Smithsonian Institution, to the legislative chambers of such foreign governments as may agree to send to the United States current copies of their Parliamentary Record or like publication. The act of March 3, 1925, increased to 125 the number of Congressional Records provided for this purpose.

In accordance with the terms of the first Brussels convention, sets of United States official documents are forwarded through the Exchange Service to 101 foreign depositories. The governments receiving these documents send to the United States, in return, copies of their own publications, which are deposited in the Library of Congress. By the terms of the second convention, copies of the daily Congressional Record are forwarded by the Institution directly by mail to foreign parliaments, those bodies sending in return copies of their own proceedings. In accordance with the latter convention, 75 copies of the Congressional Record are now being transmitted abroad, a statement concerning which will be found on a subsequent page of this report.

A list of the foreign depositories is given below:

DEPOSITORIES OF FULL SETS

ARGENTINE REPUBLIC: Ministerio de Relaciones Exteriores, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bundesamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
BADEN: Universitäts-Bibliothek, Freiburg. (Depository of the State of Baden.)
BAVARIA: Staats-Bibliothek, Munich.
BELGIUM: Bibliothèque Royale, Brussels.
BRAZIL: Bibliotheca Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca de la Universidad Nacional de La Plata. (Depository of the Province of Buenos Aires.)
CANADA: Library of Parliament, Ottawa.
CHILE: Biblioteca del Congreso Nacional, Santiago.
CHINA: Metropolitan Library, Pei Hai, Peking.
COLOMBIA: Biblioteca Nacional, Bogotá.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA: Secretaría de Estado (Asuntos Generales y Canje Internacional), Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DENMARK: Kongelige Bibliotheket, Copenhagen.
ENGLAND: British Museum, London.
ESTHONIA: Riigiraamatukogu (State Library), Reval.
FRANCE: Bibliothèque Nationale, Paris.
GERMANY: Deutsche Reichstags-Bibliothek, Berlin.
GLASGOW: City Librarian, Mitchell Library, Glasgow.
GREECE: Bibliothèque Nationale, Athens.
HUNGARY: Hungarian House of Delegates, Budapest.
INDIA: Imperial Library, Calcutta.
IRISH FREE STATE: National Library of Ireland, Dublin.
ITALY: Biblioteca Nazionale Vittorio Emanuele, Rome.
JAPAN: Imperial Library of Japan, Tokyo.
LONDON: London School of Economics and Political Science. (Depository of the London County Council.)
MANITOBA: Provincial Library, Winnipeg.
MEXICO: Biblioteca Nacional, Mexico.
NETHERLANDS: Bibliotheek van de Tweede Kamer der Staten-Generaal. The Hague.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NORTHERN IRELAND: Ministry of Finance, Belfast.
NORWAY: Universitets-Bibliotek, Oslo. (Depository of the Government of Norway.)
ONTARIO: Legislative Library, Toronto.
PARIS: Préfecture de la Seine.
PERU: Biblioteca Nacional, Lima.
POLAND: Bibliothèque du Ministère des Affaires Étrangères, Warsaw.
PORTUGAL: Bibliotheca Nacional, Lisbon.
PRUSSIA: Preussische Staatsbibliothek, Berlin, N. W. 7.
QUEBEC: Library of the Legislature of the Province of Quebec, Quebec.
QUEENSLAND: Parliamentary Library, Brisbane.
RUSSIA: Shipments temporarily suspended.
SAXONY: Sächsische Landesbibliothek, Dresden—N. 6.

SOUTH AUSTRALIA: Parliamentary Library, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SWEDEN: Kungliga Biblioteket, Stockholm.
SWITZERLAND: Bibliothèque Centrale Fédérale, Berne.
SWITZERLAND: Library of the League of Nations, Palace of Nations, Quai de Leman, Geneva.
TASMANIA: Parliamentary Library, Hobart.
TURKEY: Shipments temporarily suspended.
UNION OF SOUTH AFRICA: State Library, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
VENEZUELA: Biblioteca Nacional, Caracas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
WURTTEMBERG: Landesbibliothek, Stuttgart.
YUGOSLAVIA: Ministère des Affaires Étrangères, Belgrade.

DEPOSITORIES OF PARTIAL SETS

ALBERTA: Provincial Library, Edmonton.
ALSACE-LORRAINE: Bibliothèque Universitaire et Régionale de Strasbourg, Strasbourg.
BOLIVIA: Ministerio de Colonización y Agricultura, La Paz.
BREMEN: Senatskommission für Reichs- und Auswärtige Angelegenheiten.
BRITISH COLUMBIA: Legislative Library, Victoria.
BRITISH GUIANA: Government Secretary's Office, Georgetown, Demarara.
BULGARIA: Ministère des Affaires Étrangères, Sofia.
CEYLON: Colonial Secretary's Office (Record Department of the Library), Colombo.
DANZIG: Stadtbibliothek, Free City of Danzig.
DOMINICAN REPUBLIC: Biblioteca del Senado, Santo Domingo.
ECUADOR: Biblioteca Nacional, Quito.
EGYPT: Bibliothèque Royale, Cairo.
FINLAND: Parliamentary Library, Helsingfors.
GUATEMALA: Secretary of the Government, Guatemala.
HAITI: Secrétaire d'Etat des Relations Extérieures, Port-au-Prince.
HAMBURG: Senatskommission für die Reichs- und Auswärtigen Angelegenheiten.
HESSE: Landesbibliothek, Darmstadt.
HONDURAS: Secretary of the Government, Tegucigalpa.
ICELAND: National Library, Reykjavik.
JAMAICA: Colonial Secretary, Kingston.
LATVIA: Bibliothèque d'Etat, Riga.
LIBERIA: Department of State, Monrovia.
LOURENÇO MARQUEZ: Government Library, Lourenço Marquez.
LÜBECK: President of the Senate.
MADRAS, PROVINCE OF: Chief Secretary to the Government of Madras, Public Department, Madras.
MALTA: Minister for the Treasury, Valetta.
NEW BRUNSWICK: Legislative Library, Fredericton.
NEWFOUNDLAND: Colonial Secretary, St. John's.
NEW ZEALAND: General Assembly Library, Wellington.
NICARAGUA: Superintendente de Archivos Nacionales, Managua.
NOVA SCOTIA: Provincial Secretary of Nova Scotia, Halifax.

PANAMA: Secretaría de Relaciones Exteriores, Panama.
PARAGUAY: Sección Canje Internacional de Publicaciones del Ministerio de Relaciones Exteriores, Estrella 563, Asunción.
PRINCE EDWARD ISLAND: Legislative Library, Charlottetown.
RIO DE JANEIRO: Bibliotheca da Assemblea Legislativa do Estado, Nictheroy.
ROUMANIA: Academia Romana, Bucharest.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SASKATCHEWAN: Government Library, Regina.
SIAM: Department of Foreign Affairs, Bangkok.
STRAITS SETTLEMENTS: Colonial Secretary, Singapore.
THURINGIA: Rothenberg-Bibliothek, Landesuniversität, Jena.
UNITED PROVINCES OF AGRA AND OUDH: University of Allahabad, Allahabad.
VIENNA: Bürgermeister-Amt der Stadt, Wien.

INTERPARLIAMENTARY EXCHANGE OF OFFICIAL JOURNAL

During the year the governments of 25 foreign states have entered into the immediate exchange of the Official Journal with the United States Government. The names of these states are: Aguascalientes, Anhalt, Argentine Republic, Braunschweig, Chihuahua, China, Coahuila, Colima, Dominican Republic, Durango, Dutch East Indies, Germany, Guerrero, Jalisco, Lower California Territory, Mexico, Nuevo León, Oldenburg, San Luis Potosi, Sinaloa, Sonora, Tabasco, Tamaulipas, Vera Cruz, Yucatan.

To the above statement I may add that the Ministère des Affaires Étrangères, Bucharest, has been listed to receive a copy of the daily issue of the Congressional Record. The interparliamentary exchange of the Official Journal was entered into with the Government of Roumania in 1909, and since that time one copy of the Record has been transmitted to the Bibliothèque de la Chambre des Députés.

The total number of copies of the daily issue of the Congressional Record now forwarded abroad through the Institution is 75. A complete list of the states taking part in this immediate exchange is given below, together with the names of the establishments to which the record is mailed:

AGUASCALIENTES: Gobernador del Estado de Aguascalientes, Aguascalientes.
ANHALT: Anhaltische Landesbücherei, Dessau.
ARGENTINE REPUBLIC:
Biblioteca del Congreso Nacional, Buenos Aires.
Cámara de Diputados, Oficina de Información Parlamentaria, Buenos Aires.
AUSTRALIA: Library of the Commonwealth Parliament, Melbourne.
AUSTRIA: Bibliothek des Nationalrates, Wien I.
BADEN: Universitäts-Bibliothek, Heidelberg.
BELGIUM: Bibliothèque de la Chambre des Représentants, Brussels.
BOLIVIA: Cámara de Diputados, Congreso Nacional, La Paz.
BRAUNSCHWEIG: Bibliothek des Braunschweigischen Staatsministeriums, Braunschweig.
BRAZIL: Bibliotheca do Congresso Nacional, Rio de Janeiro.
BUENOS AIRES: Biblioteca del Senado de la Provincia de Buenos Aires, La Plata.

CANADA:
Library of Parliament, Ottawa.
Clerk of the Senate, Houses of Parliament, Ottawa.
CHIHUAHUA: Gobernador del Estado de Chihuahua.
CHINA: Metropolitan Library, Pei Hai, Peking.
COAHUILA: Periódico Oficial del Estado de Coahuila, Palacio de Gobierno, Saltillo.
COLIMA: Gobernador del Estado de Colima, Colima.
COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CUBA:
Biblioteca de la Cámara de Representantes, Habana.
Biblioteca del Senado, Habana.
CZECHOSLOVAKIA: Bibliothèque de l'Assemblée Nationale, Prague.
DANZIG: Stadtbibliothek, Danzig.
DENMARK: Rigsdagens Bureau, Copenhagen.
DOMINICAN REPUBLIC: Biblioteca del Senado, Santo Domingo.
DURANGO: Gobernador Constitucional del Estado de Durango, Durango.
DUTCH EAST INDIES: Volksraad van Nederlandsch-Indië, Batavia, Java.
ESTHONIA: Riigiraamatukogu (State Library), Reval.
FRANCE:
Bibliothèque de la Chambre des Députés, au Palais Bourbon, Paris.
Bibliothèque du Sénat, au Palais du Luxembourg, Paris.
GERMANY: Deutsche Reichstags-Bibliothek, Berlin, N. W. 7.
GREAT BRITAIN: Library of the Foreign Office, Downing Street, London, S. W. 1.
GREECE: Library of Parliament, Athens.
GUATEMALA: Biblioteca de la Oficina Internacional Centro-Americana, 8a Calle Poniente No. 1, Guatemala.
GUERRERO: Gobernador del Estado de Guerrero, Chilpancingo.
HAITI: Secrétaire d'État des Relations Extérieures, Port-au-Prince.
HONDURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
HUNGARY: Bibliothek des Abgeordnetenhauses, Budapest.
INDIA: Legislative Library, Simla.
ITALY:
Biblioteca della Camera dei Deputati, Palazzo di Monte Citorio, Rome.
Biblioteca del Senato del Regno, Palazzo Madama, Rome.
JALISCO: Biblioteca del Estado, Guadalajara.
LATVIA: Library of the Saeima, Riga.
LIBERIA: Department of State, Monrovia.
LOWER CALIFORNIA TERRITORY: Gobernador del Distrito Norte, Mexicali, B.C.
MEXICO: Secretaria de la Cámara de Diputados, Mexico, D. F.
NEW SOUTH WALES: Library of Parliament, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Stortingets Bibliotek, Oslo.
NUEVO LEÓN: Biblioteca del Estado, Monterey.
OLDENBURG: Oldenburgisches Staatsministerium, Oldenburg i. B.
PERU: Cámara de Diputados, Congreso Nacional, Lima.
POLAND: Ministère des Affaires Étrangères, Warsaw.
PORTUGAL: Bibliotheca do Congresso da Republica, Lisbon.
PRUSSIA: Bibliothek des Abgeordnetenhauses, Prinz-Albrechtstrasse 5, Berlin, S. W. 11.
QUEENSLAND: Chief Secretary's Department, Brisbane.

ROUMANIA:
Bibliothèque de la Chambre des Députés, Bucharest.
Ministère des Affaires Étrangères, Bucharest.
SAN LUIS POTOSI: Congreso del Estado, San Luis Potosi.
SINALOA: Gobernador del Estado de Sinaloa, Culiacan.
SONORA: Gobernador del Estado de Sonora, Hermosillo.
SPAIN:
Biblioteca del Congreso de los Diputados, Madrid.
Biblioteca del Senado, Madrid.
SWITZERLAND:
Bibliothèque de l'Assemblée Fédérale Suisse, Berne.
Library of the League of Nations, Geneva.
TABASCO: Secretaría General de Gobierno, Sección 3a Ramo de Prenso, Villahermosa.
TAMAULIPAS: Secretaria General de Gobierno, Victoria.
TRANSVAAL: State Library, Pretoria.
UNION OF SOUTH AFRICA: Library of Parliament, Cape Town.
URUGUAY: Biblioteca de la Cámara de Representantes, Montevideo.
VENEZUELA: Cámara de Diputados, Congreso Nacional, Caracas.
VERA CRUZ: Gobernador del Estado de Vera Cruz, Departamento de Gobernación y Justicia, Jalapa.
WESTERN AUSTRALIA: Library of Parliament of Western Australia, Perth.
YUGOSLAVIA: Library of the Skupshtina, Belgrade.
YUCATAN: Gobernador del Estado de Yucatan, Merida, Yucatan.

A complete list of the foreign exchange agencies or bureaus is given below. Those in the larger countries and many of those in the smaller countries forward to the Smithsonian Institution reciprocal contributions for distribution in the United States. Correspondents desiring to make use of any of the exchange agencies in the forwarding of consignments to the United States should make application directly to the respective bureau.

ALGERIA, via France.
ANGOLA, via Portugal.
ARGENTINE REPUBLIC: Comisión Protectora de Bibliotecas Populares, Calle Córdoba 931, Buenos Aires.
AUSTRIA: Bundessamt für Statistik, Schwarzenbergstrasse 5, Vienna I.
AZORES, via Portugal.
BELGIUM: Service Belge des Échanges Internationaux, Rue des Longs-Chariots 46, Brussels.
BOLIVIA: Oficina Nacional de Estadística, La Paz.
BRAZIL: Servicio de Permutações Internacionaes, Bibliotheca Nacional, Rio de Janiero.
BRITISH COLONIES: Crown Agents for the Colonies, London.
BRITISH GUIANA: Royal Agricultural and Commercial Society, Georgetown.
BRITISH HONDURAS: Colonial Secretary, Belize.
BULGARIA: Institutions Scientifiques de S. M. le Roi de Bulgarie, Sofia.
CANARY ISLANDS, via Spain.
CHILE: Servicio de Canjes Internacionales, Biblioteca Nacional, Santiago.
CHINA: Bureau of International Exchange of Publications, Ministry of Education, Peking.
COLOMBIA: Oficina de Canjes Internacionales y Reparto, Biblioteca Nacional, Bogotá.

COSTA RICA: Oficina de Depósito y Canje Internacional de Publicaciones, San José.
CZECHOSLOVAKIA: Service Tchécoslovaque des Échanges Internationaux, Bibliothèque de l'Assemblée Nationale, Prague 1-79.
DANZIG: Amt für den Internationalen Schriftenaustausch der Freien Stadt Danzig, Stadtbibliothek, Danzig.
DENMARK: Kongelige Danske Videnskabernes Selskab, Copenhagen.
DUTCH GUIANA: Surinaamsche Koloniale Bibliotheek, Paramaribo.
ECUADOR: Ministerio de Relaciones Exteriores, Quito.
EGYPT: Sent by mail.
ESTHONIA: Riigiraamatukogu (State Library), Reval.
FINLAND: Delegation of the Scientific Societies of Finland, Helsingfors.
FRANCE: Service Français des Échanges Internationaux, 110 Rue de Grenelle, Paris.
GERMANY: Amerika-Institut, Universitätstrasse 8, Berlin, N. W. 7.
GREAT BRITAIN AND IRELAND: Messrs. Wheldon & Wesley, 2, 3, and 4 Arthur St., New Oxford St., London, W. C. 2.
GREECE: Bibliothèque Nationale, Athens.
GREENLAND, via Denmark.
GUATEMALA: Instituto Nacional de Varones, Guatemala.
HAITI: Secrétaire d'État des Relations Extérieures, Port-au-Prince.
HONDURAS: Biblioteca Nacional, Tegucigalpa.
HUNGARY: Service Hongrois des Échanges Internationaux, Musée National Budapest, VIII.
ICELAND, via Denmark.
INDIA: Superintendent of Stationery, Bombay.
ITALY: Ufficio degli Scambi Internazionali, Biblioteca Nazionale Vittorio Emanuele, Rome.
JAMAICA: Institute of Jamaica, Kingston.
JAPAN: Imperial Library of Japan, Tokyo.
JAVA, via Netherlands.
KOREA: Government General, Seoul.
LATVIA: Service des Échanges Internationaux, Bibliothèque d'État de Lettonie, Riga.
LIBERIA: Bureau of Exchanges Department of State, Monrovia.
LITHUANIA: Sent by mail.
LOURENÇO MARQUEZ, via Portugal.
LUXEMBURG, via Belgium.
MADAGASCAR, via France.
MADEIRA, via Portugal.
MOZAMBIQUE, via Portugal.
NETHERLANDS: Bureau Scientifique Central Néerlandais, Bibliothèque de l'Académie Technique, Delft.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: Dominion Museum, Wellington.
NICARAGUA: Ministerio de Relaciones Exteriores, Managua.
NORWAY: Universitets-Bibliotek, Oslo.
PALESTINE: Hebrew University Library, Jerusalem.
PANAMA: Secretaría de Relaciones Exteriores, Panama.
PARAGUAY: Sección Canje Internacional de Publicaciones del Ministerio de Relaciones Exteriores. Estrella 563, Asuncion.
PERU: Oficina de Reparto, Depósito y Canje Internacional de Publicaciones, Ministerio de Fomento, Lima.
POLAND: Service Polonais des Échanges Internationaux, Bibliothèque du Ministère des Affaires Étrangères, Warsaw.

PORTUGAL: Secção de Trocas Internacionaes, Bibliotheca Nacional, Lisbon.
QUEENSLAND: Bureau of Exchanges of International Publications, Chief Secretary's Department, Brisbane.
ROUMANIA: Bureau des Échanges Internationaux, Institut Météorologique Central, Bucharest.
RUSSIA: Academy of Sciences, Leningrad.
SALVADOR: Ministerio de Relaciones Exteriores, San Salvador.
SIAM: Department of Foreign Affairs, Bangkok.
SOUTH AUSTRALIA: Public Library of South Australia, Adelaide.
SPAIN: Servicio del Cambio Internacional de Publicaciones, Cuerpo Facultativo de Archiveros, Bibliotecarios y Arqueólogos, Madrid.
SUMATRA, via Netherlands.
SWEDEN: Kongliga Svenska Vetenskaps Akademien, Stockholm.
SWITZERLAND: Service Suisse des Échanges Internationaux, Bibliothèque Centrale Fédérale, Berne.
SYRIA: American University of Beirut.
TASMANIA: Secretary to the Premier, Hobart.
TRINIDAD: Royal Victoria Institute of Trinidad and Tobago, Port-of-Spain.
TUNIS, via France.
TURKEY: Robert College, Constantinople.
UNION OF SOUTH AFRICA: Government Printing Works, Pretoria, Transvaal.
URUGUAY: Oficina de Canje Internacional de Publicaciones. Montevideo.
VENEZUELA: Biblioteca Nacional, Carácas.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: Public Library of Western Australia, Perth.
YUGOSLAVIA: Académie Royale Serbe des Sciences et des Arts, Belgrade.

RULES GOVERNING THE TRANSMISSION OF EXCHANGES

For the information of any who may desire to make use of the Smithsonian system of exchanges in the forwarding of publications to foreign correspondents, there is reproduced below a revised edition of a circular containing a brief description of the service and the rules under which packages are received for distribution.

In effecting the world-wide distribution of its first publications, the Smithsonian Institution established foreign agencies by means of which it was enabled to materially assist institutions and individuals of this country in the transmission of their publications abroad, and also foreign societies and individuals in distributing their publications in the United States.

In more recent years the Smithsonian Institution has been charged with the duty of conducting the official Exchange Bureau of the United States Government, through which the publications authorized by Congress are exchanged for those of other governments; and by a formal treaty it acts as intermediary between the learned bodies and scientific and literary societies of this and other countries for the reception and transmission of their publications.

Attention is called to the fact that this is an international and not a domestic exchange service, and that it is designed to facilitate exchanges between the United States and other countries only. As publications from domestic sources for addresses in Hawaii, the Philippine Islands, Porto Rico, and other territory subject to the jurisdiction of the United States do not come within the designation "international," they are not accepted by the Institution for transmission through the service.

Packages prepared in accordance with the rules enumerated below will be received by the Smithsonian Institution from individuals or institutions of learning in the United States and forwarded to their destinations abroad through the various exchange bureaus or agencies in other countries. Many of those bureaus and agencies will likewise receive packages of publications from correspondents in their countries for distribution as gifts or exchanges to correspondents in the United States and its dependencies and will forward them to Washington, after which the Institution will transmit them to their destinations by mail free of cost to the recipients.

On receipt of a consignment from a domestic source it is assigned a "record number," which number is, for identification purposes, placed on each package contained therein. After the packages have been recorded they are packed in boxes with publications from other senders and are forwarded by freight to the bureaus or agencies abroad which have undertaken to distribute exchanges in those countries. To Great Britain and Germany shipments are made weekly; to France and Italy, semimonthly; and to all other countries consignments are forwarded at intervals not exceeding a month.

The Institution assumes no responsibility in the transmission of packages intrusted to its care, but at all times endeavors to forward exchanges safely and as promptly as possible. Especial attention should be called in this connection to the time ordinarily required for the delivery of packages sent through the exchange service. To Great Britain and Germany, for example, where weekly shipments are made, the average time for a package to reach its destination is about six weeks. To those countries to which shipments are made at semimonthly and monthly intervals, the time of delivery is, of course somewhat longer, depending on the distance and also whether packages are received at the Institution immediately before or after a shipment. If, therefore, advance notices are mailed by senders, mention should be made of the above facts in order that consignees may expect some delay between the receipt of notices and the arrival of packages. In cases where greater dispatch is desired, publications should be forwarded by the senders to their foreign destinations direct by mail.

RULES

The rules governing the Smithsonian International Exchange Service are as follows:

1. Consignments from correspondents in the United States containing packages for transmission abroad should be addressed—

SMITHSONIAN INSTITUTION,
International Exchanges,
Washington, D. C.

and forwarded with carriage charges to Washington prepaid.

2. In forwarding a consignment the sender should mail a letter to the Institution stating by what route it is being shipped, and the number of boxes or parcels comprising the shipment. A list giving the name and address of each consignee should also be furnished. It is important that this request be complied with in order that a detailed record of the contents of consignments may be kept in the files of the exchange office for use in answering inquiries concerning the forwarding of packages.

3. Packages should be legibly and fully addressed, using, when practicable, the language of the country to which they are to be forwarded. In order

to avoid any possible dispute as to ownership, names of individuals should be omitted from packages intended for societies and other establishments.

4. Packages should be securely wrapped, using cardboard, if necessary to protect plates from crumpling.

5. Letters are not permitted in exchange packages.

6. If donors desire acknowledgments, packages may contain receipt-forms to be signed and returned by the establishment or individual addressed. Should publications be desired in exchange, a request to that effect may be printed on the receipt-form or on the package.

7. The work carried on by the International Exchange Service is not in any sense of a commercial nature, but is restricted to the transmission of publications sent as exchanges or donations. Books sold or ordered through the trade are, therefore, necessarily excluded.

8. Specimens are not accepted for distribution, except when permission has been obtained from the Institution.

Respectfully submitted.

C. G. ABBOT,
Assistant Secretary, in charge of Library and Exchanges.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 6

:PORT ON THE NATIONAL ZOOLOGICAL PARK

I have the honor to submit herewith the following report)perations of the National Zoological Park for the fiscal year une 30, 1926.

ıppropriation made by Congress under the bill for the Dis- Columbia for the regular maintenance of the park was), and there was the usual allotment of $300 for printing and . Virtually the entire appropriation was required for ıance, so that very little could be done in the way of per- improvement, and some much-needed repairs had to be l.

e the collection of animals on exhibition has not decreased bers it has lost somewhat in value, as several serious gaps curred during the year which it has not been possible to fill. s especial lack among the larger kinds of mammals which are ve and, therefore, difficult to include in the present budget.

ACCESSIONS

.—There were added to the collection by gift a total of 150 . The Canadian Government, through Hon. J. B. Harkin, sioner of Dominion parks, presented a splendid male Rocky in sheep as a new head to the little herd that has bred here ssfully for nine years past.

ine speciments of rhea, the ostrich of South America, were l as a gift from Dr. Daniel Garcia Accevedo, of Montevideo, y; and a fine collection of South American snakes, includ- cimens of bushmaster and fer-de-lance, was presented by al Brazil, of Sao Paulo, Brazil. All these came from South ı under the special care of Dr. W. L. Schmitt of the Na- luseum.

H. C. Kellers, United States Navy, who accompanied the ıent's solar eclipse expedition to Sumatra, brought back for ı a very interesting collection of birds and snakes, including .s, fruit pigeons, various other birds, and two Philippine nakes. These reached the park in excellent condition and ıluable additions to the exhibits.

Mr. Samuel Kress, of Port Limon, Costa Rica, presented a three-toed sloth and a paca; Miss Elizabeth Clayton, Pedro Miguel, Canal Zone, an ocelot; Mr. P. W. Shufeldt, Belize, British Honduras, a margay; and Mrs. G. J. Schirch, Washington, D. C., a Guatemalan deer.

A nice pair of Canada lynx was received from Mr. A. L. Jones, of Juneau, Alaska.

Mr. M. K. Brady, of Washington, D. C., presented four giant salamanders, a Loochoo terrapin and a leprous terrapin.

A Tasmanian wallaby, a bay lynx and an alligator, that had been presented to the President, were placed in the park.

Among the miscellaneous donations also were several species new to the collection.

The complete list of donors and gifts is as follows:

Dr. Daniel Garcia Accevedo, Montevideo, Uruguay, through Dr. W. L. Schmitt, United States National Museum, 6 rheas.

Mr. S. M. Alvis, Fisherville, Va., gray spider monkey.

Dr. W. E. Balderson, Washington, D. C., water snake.

Mr. Herbert Barber, Washington, D. C., little blue heron.

Mr. Oscar E. Baynard, Plant City, Fla., sandhill crane.

Miss Martha M. Beattie, Washington, D. C., alligator.

Private P. S. Bender, United States Army, alligator.

Mr. M. K. Brady, Washington, D. C., Loochoo terrapin, leprous terrapin, and four giant salamanders.

Dr. Vital Brazil, Sao Paulo, Brazil, through Dr. W. L. Schmitt, United States National Museum, 22 Brazilian snakes.

Mr. L. B. Brooks, Remington, Va., barn owl.

Mr. Robert F. Burgess, Washington, D. C., coyote.

Lieut. W. A. Burgess, Manila, P. I., Philippine heron.

Mr. W. B. Byrd, jr., Washington, D. C., screech owl.

Canadian Government, through Hon. J. B. Harkin, Rocky Mountain sheep.

Carnegie Institution, Washington, D. C., Gila monster.

Miss Elizabeth Clayton, Pedro Miguel, Canal Zone, ocelot.

Miss Colley, Washington, D. C., ringed turtle dove.

President Coolidge, White House, alligator, rufus-bellied wallaby, and bay lynx.

Miss Nellie M. Darling, Utica, N. Y., yellow-and-blue macaw.

Miss Virginia Davin, Palmyra, Va., alligator.

Mr. Charles F. Denley, Rockville, Md., sharp-shinned hawk.

Miss Sybil J. Disney, Takoma Park, D. C., brown capuchin.

Capt. John R. Edie, United States Navy, gray fox and three English pheasants.

Mr. A. T. Eisenger, Washington, D. C., double-yellow-head parrot.

Mr. C. L. Fagan, Rahway, N. J., two Inca terns.

Mr. N. H. Field, Washington, D. C., sulphur-crested cockatoo.

Miss Alice T. Flynn, Washington, D. C., grass paroquet.

Mr. Charles R. Grant, jr., Washington, D. C., tortoise.

Rev. E. J. Head, Hickory, N. C., banded rattlesnake.

Mr. Emmett H. Heitmuller, Washington, D. C., alligator.

Mr. J. Henderson, Washington, D. C., red-tailed hawk.
Mrs. William Herbertson, Frederick, Md., two alligators.
Mr. George Hofer, Tucson, Ariz., red-shafted flicker, two Harris' ground squirrels, and gray fox.
Mrs. E. L. Hoffman, Washington. D. C.; grass paroquet.
Mr. W. F. Humme, Henderson, Va., two peafowls.
Mr. H. M. Ingram, Addison, Va., alligator.
Mr. Victor Jaffe, Somerset, Md., corn snake.
Mr. A. L. Jones, Juneau, Alaska, two Canada lynxes.
Mr. Neil M. Judd, Washington, D. C., prairie rattlesnake.
Dr. H. C. Kellers, United States Navy, two Philippine green snakes, two hill mynahs, four bleeding-heart doves, six necklaced doves, two Malayan wreathed hornbills, two fruit pigeons.
Mr. S. Kress, Port Limon, Costa Rica, paca and three-toed sloth.
Messrs. Lansburgh & Bro., Washington, D. C., white-throated capuchin.
Mrs. Robert E. Lee, Washington, D. C., ring-necked dove.
Legation of Holland, alligator.
Mr. W. B. Lovett, Washington, D. C., three bald eagles.
Mr. E. B. McLean, Washington, D. C., alligator, five muscovy ducks, three Chinese geese, and Canada goose.
Mrs. R. J. Mayer, Washington, D. C., hedgehog.
Mr. John J. Murphy, St. Cloud, Fla., diamond rattlesnake.
Miss S. M. Perry, Staunton, Va., gray fox.
Dr. John C. Phillips, Washington, D. C., brant.
Mr. J. H. Polkinhorn, Washington, D. C., marmoset.
Mr. B. V. Roberts, Washington, D. C., Virginia rail.
Mr. W. F. Roberts, Washington, D. C., Pennant's paroquet.
Mrs. Geo. J. Schirch, Washington, D. C., Guatemalan deer.
Mr. Edw. S. Schmid, Washington, D. C., alligator.
Mr. E. W. Scott, Washington, D. C., great horned owl.
Mr. P. W. Shufeldt, Belize, B. H., margay.
Mrs. C. F. Spradling, Athens, Tenn., woodchuck, banded rattlesnake, and six western painted turtles.
Dr. H. R. Street, Washington, D. C., Santo Domingo parrot.
Mr. J. E. Tylor, Washington, D. C., raccoon.
Mr. Allen Underwood, two Java finches and Gouldian finch.
Miss Minnie Warner, Washington, D. C., barred owl.
Mr. J. R. Whipple, Washington, D. C., common canary.
Mrs. N. J. Wiley, Washington, D. C., yellow-head parrot.
Miss Genevieve Wimsatt, Washington, D. C., crested mynah.
Mr. Charles Wilson, Washington, D. C., white-throated capuchin.
Mr. W. V. Wilson, Rockville, Md., red fox.
Mr. Hiram Yoder, Tuleta, Texas, 17 turtles.
Mr. Joe Zoffin, Washington, D. C., alligator.
Unknown donor, bare-jawed troupial.

Births.—During the year 101 mammals, birds, and reptiles, born or hatched at the park, were added to the collection. Among the mammals were Rocky Mountain sheep, mouflon, Alpine ibex, American bison, Indian buffalo, yak, guanaco, various deer, Javan and Japanese monkeys, raccoon, rock kangaroo, beaver, and several other rodents. The birds included blue goose, white-cheeked goose, rosy-

billed pochard, sacred ibis, and 6 other species; and of snakes, the fer-de-lance and *Bothrops alternatus*. Two eggs were produced by the pair of California condors but failed to hatch.

Exchanges.—From the Zoological Garden of Wellington, New Zealand, were received 4 rock-hopper penguins, 2 paradise ducks, 2 lesser rails, and 2 specimens of tuatera, a lizard-like animal that is of great interest as being the oldest type of reptile now living. The penguin, lesser rail, and paradise duck were species new to the collection. Three female sea lions were received from the Zoological Society of San Diego, Calif.

Purchases.—A single-wattled cassowary, Humboldt's saki, Abyssinian lynx and alligator lizard (*Dracœna guianensis*), all new to the collection, were purchased during the year, also a black leopard, 2 prong-horns, an Australian cassowary, and a small lot of finches and other cage-birds to replenish the collections in the bird house.

Deposits.—Among the animals received on indefinite deposit were an orang and a pair of white fallow deer from Mr. Victor J. Evans, a chacma baboon from Mr. E. R. Grant, and a silver black fox from the Keystone Fox Ranch.

The Biological Survey, United States Department of Agriculture, transferred to the park a number of animals taken by field agents of the bureau, including ravens, magpies, western porcupines, 2 Mexican pumas, and 13 white pelicans.

REMOVALS

Fifty-five mammals, birds, and reptiles were sent away in exchange to other zoological gardens during the year. Among these were two American bison, an elk, six Japanese deer, four fallow deer, a guanaco, a hippopotamus, a European bear, some small mammals, and a few birds and reptiles.

Losses by death were mainly either of animals that had been long in the collection or of those very recently received. Among the former were a sloth bear that had lived in the park 21 years and 6 months; a cinnamon bear, 17 years; a yak, 18 years and 3 months; a sambar deer and a Bactrian camel, each 14 years and 3 months; a male Rocky Mountain sheep, 8 years and 4 months; a rhea, 16 years and 5 months. A male mona monkey, survivor of the pair, the female of which died a year earlier after having borne 10 young, had been in the collection 16 years. A male Grevy's zebra that died October 9, 1925, was received February 11, 1913, from the United States Department of Agriculture, where it had been used for breeding purposes. Other important animals that had lived for shorter periods were a snow leopard, two sea lions, a female Rocky

Mountain sheep, a female Rocky Mountain goat, a capybara, two ostriches, and a kiwi. Loss of reptiles was large as compared with their total number, owing to the lack of quarters that afford suitable conditions for them.

Post-mortem examinations were made by the pathological division of the Bureau of Animal Industry. The following list shows the results of autopsies, the cases being arranged by groups:

CAUSES OF DEATH

MAMMALS

Marsupialia: Pneumonia, 1; gastroenteritis, 1; gastric ulcer, 1; pericarditis, 1; fatty degeneration of liver, 1; infection of jaw, 3.

Carnivora: Enteritis, 1; gastroenteritis, 3; intestinal parasites, 2; abscess of lungs, 1; abscess of shoulder, 1; old age, 1.

Pinnipedia: Pneumonia, 1.

Rodentia: Enteritis, 1; intestinal parasites, 1; difficult parturition, 1.

Primates: Pneumonia, 2; enteritis, 2; gastroenteritis, 1; intestinal parasites, 3; degeneration of heart, 1; osteomalacia, 1; no cause found, 2.

Artiodactyla: Pneumonia, 2; intestinal parasites, 1; impaction of rumen, 1; abscess of lungs, 1; cystic degeneration of liver, 2; necrosis of lip, 1; old age, 3; accident, 1.

Perissodactyla: Internal hemorrhage, 1.

Edentata: Enteritis, 1.

BIRDS

Ratitæ: Abscess of leg, 1; accident, 1.

Ciconiiformes: Pericarditis, 1; no cause found, 2.

Anseriformes: Aspergillosis, 3; internal hemorrhage, 1.

Falconiformes: Aspergillosis, 1.

Gruiformes: No cause found, 1.

Psittaciformes: Aspergillosis, 1; enteritis, 2; internal abscess, 1.

Such animals, lost by death, as were of particular scientific interest, or of value for museum purposes, were transferred to the United States National Museum for preservation. These numbered 40 mammals, 44 birds, and 23 reptiles. A number of rare birds' eggs, including two eggs of the California condor mentioned above, also were sent to the Museum.

Five mammals especially needed by the Carnegie Laboratory of Embryology, Johns Hopkins Medical School, Baltimore, were sent after death to that institution; and five mammals were sent to St. Elizabeths Hospital, Washington, D. C., for special study of the brain.

ANIMALS IN THE COLLECTION JUNE 30, 1926

MAMMALS

MARSUPIALIA

Virginia opossum (*Didelphis virginiana*)	3
Tasmanian devil (*Sarcophilus harrisii*)	1
Flying phalanger (*Petaurus breviceps*)	7
Brush-tailed rock wallaby (*Petrogale penicillata*)	3
Rufous-bellied wallaby (*Macropus billardieri*)	3
Red kangaroo (*Macropus rufus*)	1
Wombat (*Phascolomys mitchelli*)	1

CARNIVORA

Kadiak bear (*Ursus middendorffi*)	2
Alaska Peninsula bear (*Ursus gyas*)	4
Yakutat bear (*Ursus dalli*)	1
Kidder's bear (*Ursus kidderi*)	2
European bear (*Ursus arctos*)	5
Grizzly bear (*Ursus horribilis*)	1
Apache grizzly (*Ursus Apache*)	1
Himalayan bear (*Ursus thibetanus*)	1
Black bear (*Euarctos americanus*)	4
Cinnamon bear (*Euarctos americanus cinnamomum*)	2
Glacier bear (*Euarctos emmonsii*)	1
Sun bear (*Helarctos malayanus*)	1
Polar bear (*Thalarctos maritimus*)	2
Dingo (*Canis dingo*)	3
Gray wolf (*Canis nubilus*)	7
Florida wolf (*Canis floridanus*)	1
Texas red wolf (*Canis rufus*)	1
Coyote (*Canis latrans*)	6
Hybrid coyote (*Canis latrans-rufus*)	4
California coyote (*Canis ochropus*)	1
Black-backed jackal (*Canis mesomelas*)	1
Rough fox (*Cerdocyon cancrivorus*)	1
Red fox (*Vulpes fulva*)	2
Silver-black fox (*Vulpes fulva*)	1
European fox (*Vulpes vulpes*)	1
Kit fox (*Vulpes velox*)	2
Gray fox (*Urocyon cinereoargenteus*)	1
Bush dog (*Ictiocyon venaticus*)	1
Cacomistle (*Bassariscus astutus*)	2
Panda (*Ailurus fulgens*)	1
Raccoon (*Procyon lotor*)	11
Florida raccoon (*Procyon lotor elucus*)	2
Gray coatimundi (*Nasua narica*)	2
Kinkajou (*Potos flavus*)	1
Mexican kinkajou (*Potos flavus azteeus*)	1
American badger (*Taxidea taxus*)	2
Florida otter (*Lutra canadensis vaga*)	3
Palm civet (*Paradoxurus hermaphroditus*)	2
Egyptian mongoose (*Herpestes ichneumon*)	1
Aard-wolf (*Proteles cristatus*)	1
Spotted hyena (*Crocuta crocuta*)	1
Striped hyena (*Hyæna hyæna*)	1
African cheetah (*Acinonyx jubatus*)	2
Lion (*Felis leo*)	3
Bengal tiger (*Felis tigris*)	1
Manchurian tiger (*Felis tigris longipilis*)	5
Leopard (*Felis pardus*)	1
Black leopard (*Felis pardus*)	1
Jaguar (*Felis onca*)	1
Serval (*Felis serval*)	1
Ocelot (*Felis pardalis*)	1
Brazilian ocelot (*Felis pardalis brasiliensis*)	1
Mexican puma (*Felis azteca*)	3
Mountain lion (*Felis hippolestes*)	1
Abyssinian caracal (*Lynx caracal nubica*)	1
Canada lynx (*Lynx canadensis*)	2
Northern wild cat (*Lynx uinta*)	1
Bay lynx (*Lynx rufus*)	3
Clouded leopard (*Neofelis nebulosa*)	1

PINNIPEDIA

California sea lion (*Zalophus californianus*)	2
San Geronimo harbor seal (*Phoca richardii geronimensis*)	1

RODENTIA

Woodchuck (*Marmota monax*)	4
Prairie dog (*Cynomys ludovicianus*)	43
Harris's ground squirrel (*Ammospermophilus harrisi*)	2
Honduras squirrel (*Sciurus boothiæ*)	1
Albino squirrel (*Sciurus carolinensis*)	3
American beaver (*Castor canadensis*)	2
Grasshopper mouse (*Onychomys leucogaster*)	2
Jumping mouse (*Zapus hudsonius*)	1
African porcupine (*Hystrix africæaustralis*)	1
Malay porcupine (*Acanthion brachyurum*)	2
Tree porcupine (*Coendou prehensilis*)	1
Western porcupine (*Erethizon epixanthum*)	1
Viscacha (*Lagostomus trichodactylus*)	2
Central American paca (*Cuniculus paca virgatus*)	3
Sooty agouti (*Dasyprocta fuliginosa*)	1
Speckled agouti (*Dasyprocta punctata*)	2
Azara's agouti (*Dasyprocta azaræ*)	1
Trinidad agouti (*Dasyprocta rubrata*)	3
Guinea pig (*Cavia porcellus*)	10
Capybara (*Hydrochærus hydrochæris*)	1

LAGOMORPHA

Domestic rabbit (*Oryctolagus cuniculus*)	10

INSECTIVORA

hedgehog (*Erinaceus euro-* ---------- 5

PRIMATES

l lemur (*Lemur catta*) ---- 1
ed lemur (*Lemur ruffrons*) - 1
lur (*Lemur macaco*) ---- 2
(*Callithrix jacchus*) ---- 1
er monkey (*Ateles geoffroyi*) - 2
spider monkey (*Ateles neg-* ---------- 1
oated capuchin (*Cebus ca-*) ---------- 4
puchin (*Cebus fatuellus*) ---- 4
capuchin (*Cebus mar-* ---------- 1
baboon (*Theropithecus ob-* ---------- 1
(*Papio porcarius*) ---------- 2
aboon (*Papio cynocephalus*) - 1
ican baboon (*Papio ibeanus*) - 1
(*Papio sphinx*) ---------- 3
pio leucophæus) ---------- 1
caque (*Cynopithecus maurus*) - 2
ape (*Simia sylvanus*) ---- 2
macaque (*Macaca fuscata*) -- 3
l monkey (*Macaca nemes-* ---------- 1
macaque (*Macaca andaman-* ---------- 1
nonkey (*Macaca rhesus*) ---- 12
nonkey (*Macaca sinica*) ---- 1
ng macaque (*Macaca irus*) --- 1
ie macaque (*Macaca syrichta*) - 1
acaque (*Macaca mordax*) ---- 6
mangabey (*Cercocebus ater-* ---------- 1
nangabey (*Cercocebus fuligi-* ---------- 3
ck's mangabey (*Cercocebus becki*) ---------- 1
llared mangabey (*Cercocebus itus*) ---------- 1
guenon (*Lasiopyga calli-* s) ---------- 2
uenon (*Lasiopyga mona*) ---- 2
zza's guenon (*Lasiopyga*) ---------- 1
white-nosed guenon (*Lasiopyga ista*) ---------- 1
zee (*Pan satyrus*) ---------- 2
an (*Pongo pygmæus*) ---- 1

ARTIODACTYLA

ar (*Sus scrofa*) ---------- 1
peccary (*Pecari angulatus*) -- 2
tamus (*Hippopotamus amphi-* ---------- 2
camel (*Camelus bactrianus*) - 1
Arabian camel (*Camelus dromedarius*) - 1
Guanaco (*Lama huanachus*) ---- 3
Llama (*Lama glama*) ---- 5
Reindeer (*Rangifer tarandus*) ---- 4
Fallow deer (*Dama dama*) ---- 5
White fallow deer (*Dama dama*) ---- 3
Axis deer (*Axis axis*) ---- 4
Hog deer (*Hyelaphus porcinus*) ---- 3
Sambar (*Rusa unicolor*) ---- 1
Barasingha (*Rucervus duvaucelli*) ---- 6
Burmese deer (*Rucervus eldii*) ---- 1
Japanese deer (*Sika nippon*) ---- 9
Red deer (*Cervus elaphus*) ---- 14
Kashmir deer (*Cervus hanglu*) ---- 2
Bedford deer (*Cervus xanthopygus*) -- 5
American elk (*Cervus canadensis*) --- 4
Virginia deer (*Odocoileus virginianus*) - 1
Guatemala deer (*Odocoileus sp.*) ---- 1
Mule deer (*Odocoileus hemionus*) ---- 1
Brocket (*Mazama sartorii*) ---- 1
Prong-horn (*Antilocapra americana*) -- 1
Blesbok (*Damaliscus albifrons*) ---- 2
White-tailed gnu (*Connochætes gnu*) -- 1
Brindled gnu (*Connochætes taurinus*) - 1
Lechwe (*Onotragus leche*) ---- 1
Sable antelope (*Egocerus niger*) ---- 1
Indian antelope (*Antilope cervicapra*) - 3
Nilgai (*Boselaphus tragocamelus*) ---- 2
Gemsbok (*Oryx gazella*) ---- 1
East African eland (*Taurotragus oryx livingstonii*) ---------- 1
Mountain goat (*Oreamnos americanus*) - 3
Tahr (*Hemitragus jemlahicus*) ---- 9
Alpine ibex (*Capra ibex*) ---- 3
Aoudad (*Ammotragus lervia*) ---- 1
Rocky Mountain sheep (*Ovis canadensis*) ---------- 9
Arizona mountain sheep (*Ovis canadensis gaillardi*) ---------- 1
Mouflon (*Ovis europæus*) ---- 5
Greenland musk-ox (*Ovibos moschatus wardi*) ---------- 2
Zebu (*Bos indicus*) ---------- 1
Yak (*Poëphagus grunniens*) ---- 4
American bison (*Bison bison*) ---- 14
Indian buffalo (*Bubalus bubalis*) ---- 4

PERISSODACTYLA

Malay tapir (*Tapirus indicus*) ---- 1
Brazilian tapir (*Tapirus terrestris*) -- 1
Baird's tapir (*Tapirella bairdii*) ---- 1
Zebra-horse hybrid (*Equus grevyi-caballus*) ---------- 1
Zebra-ass hybrid (*Equus grevyi-asinus*) ---------- 1

PROBOSCIDEA

Abyssinian elephant (*Loxodonta africana oxyotis*) ---------- 1
Sumatran elephant (*Elephas sumatranus*) ---------- 1

BIRDS

RATITÆ

South African ostrich (*Struthio australis*)	3
Somaliland ostrich (*Struthio molybdophanes*)	2
Nubian ostrich (*Struthio camelus*)	1
Rhea (*Rhea americana*)	4
Australian cassowary (*Casuarius australis*)	1
Single-wattled cassowary (*Casuarius uniappendiculatus*)	1
Sclater's cassowary (*Casuarius philipi*)	1
Emu (*Dromiceius novæhollandiæ*)	2

SPHENISCIFORMES

Rock-hopper penguin (*Catarrhactes pachyrhynchus*)	3

CICONIIFORMES

American white pelican (*Pelecanus erythrorhynchos*)	9
European white pelican (*Pelecanus onocrotalus*)	2
Roseate pelican (*Pelecanus roseus*)	2
Australian pelican (*Pelecanus conspicillatus*)	2
Brown pelican (*Pelecanus occidentalis*)	8
California brown pelican (*Pelecanus californicus*)	5
Florida cormorant (*Phalacrocorax auritus floridanus*)	3
Great white heron (*Ardea occidentalis*)	1
Great blue heron (*Ardea herodias*)	1
Goliath heron (*Ardea goliath*)	1
American egret (*Casmerodius egretta*)	1
Black-crowned night heron (*Nycticorax nycticorax nævius*)	67
Boatbill (*Cochlearius cochlearius*)	2
White stork (*Ciconia ciconia*)	1
Black stork (*Ciconia nigra*)	1
Marabou stork (*Leptoptilus crumenifer us*)	2
Wood ibis (*Mycteria americana*)	2
Sacred ibis (*Threskiornis æthiopicus*)	1
Black-headed ibis (*Threskiornis melanocephalus*)	3
Australian ibis (*Threskiornis strictipennis*)	2
White ibis (*Guara alba*)	2
Scarlet ibis (*Guara rubra*)	4

ANSERIFORMES

Crested screamer (*Chauna cristata*)	2
Mallard (*Anas platyrhynchos*)	10
Black duck (*Anas rubripes*)	5
Australian black duck (*Anas superciliosa*)	1
Gadwall (*Chaulelasmus streperus*)	1
Falcated duck (*Eunetta falcata*)	1
European widgeon (*Mareca penelope*)	3
Baldpate (*Mareca americana*)	3
Green-winged teal (*Nettion carolinense*)	3
European teal (*Nettion crecca*)	3
Baikal teal (*Nettion formosum*)	6
Blue-winged teal (*Querquedula discors*)	1
Garganey (*Querquedula querquedula*)	6
Paradise duck (*Casarca variegata*)	1
Shoveller (*Spatula clypeata*)	1
Pintail (*Dafila acuta*)	10
Bahaman pintail (*Dafila bahamensis*)	1
Wood duck (*Aix sponsa*)	7
Mandarin duck (*Dendronessa galericulata*)	10
Canvasback (*Marila valisineria*)	6
European pochard (*Marila ferina*)	3
Redhead (*Marila americana*)	10
Ring-necked duck (*Marila collaris*)	1
Tufted duck (*Marila fuligula*)	1
Lesser scaup duck (*Marila affinis*)	1
Greater scaup duck (*Marila marila*)	1
Rosy-billed pochard (*Metopiana peposaca*)	3
Hawaiian goose (*Nesochen sandvicensis*)	2
Snow goose (*Chen hyperborea*)	1
Greater snow goose (*Chen hyperborea nivalis*)	1
Blue goose (*Chen cærulescens*)	7
White-fronted goose (*Anser albifrons*)	5
American white-fronted goose (*Anser albifrons gambeli*)	1
Bean goose (*Anser fabalis*)	2
Pink-footed goose (*Anser brachyrhynchus*)	2
Chinese goose (*Cygnopsis cygnoides*)	8
Bar-headed goose (*Eulabeia indica*)	2
Canada goose (*Branta canadensis*)	4
Hutchins's goose (*Branta canadensis hutchinsii*)	3
White-cheeked goose (*Branta canadensis occidentalis*)	10
Cackling goose (*Branta canadensis minima*)	2
Brant (*Branta bernicla glaucogastra*)	8
Barnacle goose (*Branta leucopsis*)	7
Muscovy duck (*Cairina moschata*)	1
Pied goose (*Anseranas semipalmata*)	1
Black-bellied tree duck (*Dendrocygna autumnalis*)	8
Eyton's tree duck (*Dendrocygna eytoni*)	4
Mute swan (*Cygnus gibbus*)	4
Trumpeter swan (*Cygnus buccinator*)	1
Whistling swan (*Cygnus columbianus*)	1
Black swan (*Chenopis atrata*)	2

FALCONIFORMES

California condor (*Gymnogyps californianus*)	3
Turkey vulture (*Cathartes aura*)	4
Black vulture (*Coragyps urubu*)	1

lture (*Sarcoramphus papa*)___ 2
y bird (*Sagittarius serpen-*
)_____ 1
vulture (*Gyps fulvus*)_____ 1
black vulture (*Torgos trache-*
)_____ 1
is vulture (*Ægypius mona-*
_____ 2
ı (*Polyborus cheriway*)_____ 4
ailed eagle (*Uroaëtus audax*)_ 2
eagle (*Aquila chrysaëtos*)_____ 5
ellied sea eagle (*Cuncuma leu-*
ter)_____ 2
igle (*Haliæetus leucocephalus*
cephalus)_____ 8
bald eagle (*Haliæetus leuco-*
lus alascanus)_____ 3
eagle (*Helotarsus ecaudatus*)_ 1
inged hawk (*Buteo platyp-*
_____ 1
ed hawk (*Buteo borealis*)____ 8
alcon (*Poliohierax semitorqua-*
_____ 1
hawk (*Falco sparverius*)____ 3

GALLIFORMES

Curassow (*Crax panamen-*
_____ 2
lled curassow (*Mitu mitu*)__ 2
guan (*Penelope boliviana*)___ 1
guan (*Ortalis vetula*)_____ 2
ıe guinea fowl (*Acryllium vul-*
ım)_____ 2
(*Pavo cristatus*)_____ 11
peafowl (*Pavo cristatus*)_____ 1
pheasant (*Gennæus nycthemе-*
_____ 1
ımherst's pheasant (*Chrysolo-*
amherstiæ)_____ 1
ked pheasant (*Phasianus tor-*
s)_____ 12
lan partridge (*Perdix perdix*)_ 1
partridge (*Alectoris chukar*)__ 1
quail (*Lophortyx californica*
ola)_____ 1
quail (*Callipepla squamata*)__ 5
ı quail (*Cyrtonyx montezu-*
_____ 1

GRUIFORMES

ıdian gallinule (*Porphyrio cal-*
_____ 2
(*Porphyrio stanleyi*)_____ 1
ılled moor hen (*Microtribonyx*
alis)_____ 2
n coot (*Fulica americana*)___ 1
rail (*Hypotænidia philippen-*
_____ 2
Island weka rail (*Ocydromus*
alis)_____ 2
inged weka (*Ocydromus brach-*
us)_____ 2
l crane (*Megalornis mexi-*
_____ 4
rown crane (*Megalornis cana-*
s)_____ 3
White-necked crane (*Megalornis leu-*
cauchen)_____ 1
Indian white crane (*Megalornis leu-*
cogeranus)_____ 1
Lilford's crane (*Megalornis lilfordi*)__ 1
Australian crane (*Mathewsena rubi-*
cunda)_____ 2
Demoiselle crane (*Anthropoides virgo*)_ 4
Crowned crane (*Balearica pavonina*)_ 1
Kagu (*Rhynochetos jubatus*)_____ 2

CHARADRIIFORMES

Ruff (*Philomachus pugnax*)_____ 3
Lapwing (*Vanellus vanellus*)_____ 1
Yellow-wattled lapwing (*Lobivanellus*
indicus)_____ 1
South American stone-plover (*Œdic-*
nemus bistriatus vociferus)_____ 2
Pacific gull (*Gabianus pacificus*)____ 1
Great black-backed gull (*Larus mari-*
nus)_____ 3
Herring gull (*Larus argentatus*)_____ 3
Silver gull (*Larus novæhollandiæ*)___ 21
Laughing gull (*Larus atricilla*)_____ 2
Inca tern (*Noddi inca*)_____ 1
Victoria crowned pigeon (*Goura vic-*
toria)_____ 1
Australian crested pigeon (*Ocyphaps*
lophotes)_____ 4
Bronze-wing pigeon (*Phaps chalcop-*
tera)_____ 2
Marquesan dove (*Gallicolumba rubes-*
cens)_____ 1
Bleeding-heart dove (*Gallicolumba lu-*
zonica)_____ 6
Wood pigeon (*Columba palumbus*)____ 7
Mourning dove (*Zenaidura macroura*)_ 1
Mexican dove (*Zenaidura graysoni*)__ 1
White-fronted dove (*Leptotila fulvi-*
ventris brachyptera)_____ 4
Necklaced dove (*Spilopelia tigrina*)___ 9
Ringed turtledove (*Streptopelia ri-*
soria)_____ 5
Zebra dove (*Geopelia striata*)_____ 3
Bar-shouldered dove (*Geopelia humer-*
alis)_____ 1
Inca dove (*Scardafella inca*)_____ 1
Cuban ground dove (*Chæmepelia pas-*
serina aflavida)_____ 1
Green-winged dove (*Chalcophaps in-*
dica)_____ 1
Superb fruit pigeon (*Lamprotreron*
superba)_____ 1
Bronze fruit pigeon (*Muscadivores*
æneа)_____ 2

PSITTACIFORMES

Kea (*Nestor notabilis*)_____ 1
Roseate cockatoo (*Kakatoe roseica-*
pilla)_____ 14
Bare-eyed cockatoo (*Kakatoe gym-*
nopis)_____ 1
Leadbeater's cockatoo (*Kakatoe lead-*
beateri)_____ 6
White cockatoo (*Kakatoe alba*)_____ 1
Sulphur-crested cockatoo (*Kakatoe*
galerita)_____ 9

Great red-crested cockatoo (*Kakatoe moluccensis*)	1
Mexican green macaw (*Ara mexicana*)	2
Severe macaw (*Ara severa*)	1
Blue-and-yellow macaw (*Ara ararauna*)	7
Red-and-blue-and-yellow macaw (*Ara macao*)	5
Pets's paroquet (*Eupsittula canicularis*)	5
Golden-crowned paroquet (*Eupsittula aurea*)	3
Weddell's paroquet (*Eupsittula weddellii*)	8
Blue-winged parrotlet (*Psittacula passerina*)	13
Golden paroquet (*Brotogeris chrysosema*)	1
Tovi paroquet (*Brotogeris jugularis*)	6
Orange-winged paroquet (*Brotogeris chiriri*)	2
Yellow-naped parrot (*Amazona auropalliata*)	1
Mealy parrot (*Amazona farinosa*)	1
Orange-winged parrot (*Amazona amazonica*)	3
Blue-fronted parrot (*Amazona æstiva*)	1
Red-crowned parrot (*Amazona viridigenalis*)	8
Double yellow-head parrot (*Amazona oratrix*)	11
Yellow-headed parrot (*Amazona ochrocephala*)	5
Festive parrot (*Amazona festiva*)	1
Lesser white-fronted parrot (*Amazona albifrons nana*)	1
Santo Domingo parrot (*Amazona ventralis*)	4
Cuban parrot (*Amazona leucocephala*)	3
Maximilian's parrot (*Pionus maximiliani*)	1
Dusky parrot (*Pionus fuscus*)	1
Blue-headed parrot (*Pionus menstruus*)	1
Amazonian caique (*Pionites xanthomeria*)	5
Black-headed caique (*Pionites melanocephala*)	2
Lesser vasa parrot (*Coracopsis nigra*)	1
Greater vasa parrot (*Coracopsis vasa*)	1
Red-faced love-bird (*Agapornis pullaria*)	8
Gray-headed love-bird (*Agapornis madagascariensis*)	8
Abyssinian love-bird (*Agapornis taranta*)	1
Blue-bonnet paroquet (*Psephotus hæmatorrhous*)	1
Pennant's paroquet (*Platycercus elegans*)	1
Black-tailed paroquet (*Polytelis melanura*)	2
King paroquet (*Aprosmictus cyanopygius*)	2
Crimson-winged paroquet (*Aprosmictus erythropterus*)	1
Ring-necked paroquet (*Conurus torquatus*)	1
Nepalese paroquet (*Conurus nepalensis*)	2
Grass paroquet (*Melopsittacus undulatus*)	12

OUCULIFORMES

Donaldson's touraco (*Turacus donaldsoni*)	1

CORACIIFORMES

Giant kingfisher (*Dacelo gigas*)	1
Groove-billed toucanet (*Aulacorhamphus sulcatus*)	2
Malayan wreathed hornbill (*Rhytidoceros undulatus*)	2
Morepork owl (*Spiloglaux novæzealandiæ*)	1
Barred owl (*Strix varia*)	7
Florida barred owl (*Strix varia alleni*)	2
Snowy owl (*Nyctea nyctea*)	1
Screech owl (*Otus asio*)	5
Great horned owl (*Bubo virginianus*)	6
Eagle owl (*Bubo bubo*)	1
American barn owl (*Tyto alba pratincola*)	7
Red-shafted flicker (*Colaptes cafer collaris*)	3

PASSERIFORMES

Cock of the rock (*Rupicola rupicola*)	1
Silver-eared hill-tit (*Mesia argentauris*)	3
Red-billed hill-tit (*Liothrix luteus*)	19
Black-gorgeted laughing thrush (*Gerrulax pectoralis*)	2
White-eared bulbul (*Otocompsa leucotis*)	3
Red-eared bulbul (*Otocompsa jocosa*)	2
Black-headed bulbul (*Molpastes hæmorrhous*)	3
Piping crow-shrike (*Gymnorhina tibicen*)	2
European raven (*Corvus corax*)	1
American raven (*Corvus corax sinuatus*)	8
Australian crow (*Corvus coronoides*)	1
American crow (*Corvus brachyrhynchos*)	1
American magpie (*Pica pica hudsonia*)	3
Yucatan jay (*Cissilopha yucatanica*)	1
Blue jay (*Cyanocitta cristata*)	2
Green jay (*Xanthoura luxuosa*)	3
Laysan finch (*Telespyza cantans*)	1
Blue honey-creeper (*Cyanerpes cyaneus*)	1
Blue-winged tanager (*Tanagra cyanoptera*)	1

anager (*Thraupis cana*)..... 1
whydah (*Diatropura progne*).. 8
se whydah (*Steganura paradi-*
..... 2
ailed whydah (*Tetrænura regia*).. 1
on weaver (*Pyromelana afra*).. 1
lled weaver (*Quelea quelea*).... 1
weaver (*Textor albirostris*).. 2
ascar weaver (*Foudia madagas-*
ensis)..... 7
Ielena waxbill (*Estrilda as-*
la)..... 4
umped waxbill (*Estrilda rhodo-*
a)..... 1
g finch (*Munia punctulata*)..... 3
headed nun (*Munia maja*)..... 2
headed nun (*Munia atrica-*
)..... 15
ut-breasted finch (*Munia cast-*
thoræ)..... 3
inch (*Munia oryzivora*)..... 27
l grassfinch (*Poëphila perso-*
s)..... 9
faced Gouldian finch (*Poëphila*
diæ)..... 1
ced Gouldian finch (*Poëphila*
bilis)..... 1
nd finch (*Steganopleura gut-*
)..... 5
finch (*Tæniopygia castanotis*).. 8
oat finch (*Amadina fasciata*).... 14
aded finch (*Amadina erythro-*
ala)..... 1
-headed marsh-bird (*Agelaius*
ocephalus)..... 1
Australian gray jumper (*Struthidea*
cinerea)..... 1
Starling (*Sturnus vulgaris*)..... 9
Shining starling (*Lamprocorax metal-*
licus)..... 4
Crested mynah (*Æthiopsar cristatel-*
lus)..... 1
Malay grackle (*Gracula javana*)..... 2
Bare-jawed troupial (*Gymnomystax*
melanicterus)..... 1
Hooded oriole (*Icterus cucullatus*)..... 1
Yellow-tailed oriole (*Icterus mesome-*
las)..... 1
Purple grackle (*Quiscalus quiscula*)..... 2
Greenfinch (*Chloris chloris*)..... 3
European goldfinch (*Carduelis car-*
duelis)..... 4
Brambling (*Fringilla montifringilla*).. 4
Yellowhammer (*Emberiza citrinella*).. 1
House finch (*Carpodacus mexicanus*
frontalis)..... 2
San Lucas house finch (*Carpodacus*
mexicanus ruberrimus)..... 2
Canary (*Serinus canarius*)..... 17
Gray singing finch (*Serinus leucopyg-*
ius)..... 5
Gay's finch (*Phrygilus gayi*)..... 1
White-throated sparrow (*Zonotrichia*
albicollis)..... 1
San Diego song sparrow (*Melospiza*
melodia cooperi)..... 2
Saffron finch (*Sicalis flaveola*)..... 9
Seed eater (*Sporophila gutturalis*)..... 1
Blue grosbeak (*Guiraca cærulea*)..... 3
Red-crested cardinal (*Paroaria cucul-*
lata)..... 9

REPTILES

or (*Alligator mississipiensis*).. 22
a (*Sphenodon punctata*)..... 2
l toad (*Phrynosoma cornutum*).. 1
onster (*Heloderma suspectum*).. 5
l lizard (*Heloderma horridum*).. 1
s monitor (*Varanus gouldii*)..... 1
oine monitor (*Varanus salva-*
..... 1
or lizard (*Dracæna guianensis*).. 1
ython (*Python molurus*)..... 1
python (*Python reticulatus*)..... 1
ida (*Eunectes murinus*)..... 2
onstrictor (*Constrictor constric-*
..... 4
boa (*Epicrates angulifer*)..... 2
an tree-boa (*Epicrates crassus*).. 1
snake (*Coluber constrictor*)..... 2
n snake (*Elaphe quadrivittata*).. 1
nake (*Elaphe guttata*)..... 2
nake (*Pituophis melanoleucus*).. 1
snake (*Natrix sipedon*)..... 3
e pit-viper (*Bothrops alterna-*
..... 3
lance (*Bothrops lanceolatus*)..... 7
rattlesnake (*Crotalus adaman-*
)..... 3
n diamond rattlesnake (*Crotalus*
s)..... 4
Banded rattlesnake (*Crotalus horri-*
dus)..... 3
Snapping turtle (*Chelydra serpen-*
tina)..... 2
Florida snapping turtle (*Chelydra os-*
ceola)..... 1
Musk turtle (*Sternotherus odoratus*).. 1
Mexican musk turtle (*Kinosternon*
sonoriense)..... 1
South American musk turtle (*Kinos-*
ternon scorpioides)..... 5
Pennsylvania musk turtle (*Kinoster-*
non subrubrum)..... 2
Wood turtle (*Clemmys insculpta*)..... 1
Leprous terrapin (*Clemmys leprosa*).. 1
European pond turtle (*Emys orbicu-*
laris)..... 5
South American terrapin (*Nicoria*
punctularia)..... 1
South African turtle (*Homopus are-*
olatus)..... 1
Reeves turtle (*Geoclemys reevesi*)..... 1
Loochoo turtle (*Geoemyda spengleri*).. 1
Painted turtle (*Chrysemys picta*)..... 2
Western painted turtle (*Chrysemys*
belli)..... 1
Central American cooter (*Pseudemys*
ornata)..... 2

Gopher tortoise (*Gopherus polyphemus*)	2	African tortoise (*Testudo hermanni*)	1
Duncan Island tortoise (*Testudo ephippium*)	1	Angulated tortoise (*Testudo angulata*)	1
Indefatigable Island tortoise (*Testudo porteri*)	1	South African tortoise (*Testudo sp.*)	2
Albemarle Island tortoise (*Testudo vicina*)	2	Chicken turtle (*Deirochelys reticularia*)	1
South American tortoise (*Testudo denticulata*)	1	BATRACHIANS	
		Giant salamander (*Megalobatrachus japonicus*)	2

Statement of the collection

	Mammals	Birds	Reptiles and batrachians	Total
Presented	25	69	55	149
Born and hatched in National Zoological Park	39	42	22	103
Received in exchange	4	13	4	21
Purchased	24	90	9	123
Transferred from other Government departments	10	42	1	53
Deposited	10	5	15	30
	112	261	106	479

SUMMARY

Animals on hand July 1, 1925	1,620
Accessions during the year	479
Total animals handled	2,099
Deduct loss (by death, return of animals, and exchange)	480
	1,619

Status of collection

	Species	Individuals
Mammals	178	461
Birds	291	1,042
Reptiles and batrachians	48	116
Total	517	1,619

Examination of the list of animals shows that the collection is now weak in large and important forms; and, taking into consideration, further, the fact that many of those still included are very old, it is evident that greater expenditure for new stock must be made in the near future if the park is to keep its place among the principal zoological collections of the country.

VISITORS

The attendance record as determined by daily estimate was slightly less than that of 1925, but exceeded the attendance of any other previous year.

The attendance by months was as follows:

July	231,750
August	357,300
September	249,600
October	108,000
November	138,300
December	79,925
January	63,200
February	112,825
March	147,950
April	397,300
May	343,500
June	283,250
Total for year	2,512,900

Schools, classes, and similar organizations, recorded among the visitors, number 309, with a total of 24,309 individuals. Schools came from points as far distant as Maine and Illinois.

IMPROVEMENTS

The necessity of making extensive repairs to buildings and other structures and to roads, during the year, allowed only a small expenditure to be made for new work.

A new toilet building for men was constructed near the Adams Mill Road entrance to replace one which had become inadequate and unfit for use.

The boundary fence of the park was rebuilt for a distance of about 1,360 feet.

A new drainage system for the cages and walks on the south side of the lion house was put in and 300 feet of large pipe laid to connect it with the main sewer, the original drain being now altogether inadequate.

The roadway from Adams Mill Road entrance to and around the administration building was rebuilt, with some modification to provide a better grade.

A large amount of repair to roofs was done during the early part of the year, the felt with which they are covered having deteriorated with age. Several of the buildings, especially the bird house, leaked badly.

Grading was begun along the new western boundary of the park, near Cathedral Avenue. The highway which forms the boundary there had been excavated in connection with building operations on adjacent land, leaving for several hundred feet along the park line an abrupt bank 10 to 30 feet high. A survey of the region showed that at least 9,000 cubic yards must be cut from the bank to make a slope that would be permanent, while considerably more excavation would be required in order to make the land suitable for the purposes

of the park. By cooperating with the Office of Public Buildings and Public Parks, which needed the excavated material for fill along the new Rock Creek drive, it was possible to do a considerable amount of grading at comparatively small cost to the park. It is hoped that the grading can be completed within the next year, so that the fence can be established on the new boundary line.

UNIFORMS FOR POLICE

A provision of the appropriation act made available the sum of $1,000 during the year for furnishing uniforms to the policemen of the park. This makes it possible to maintain a standard of personal appearance that could not well be required of such employees when compelled to equip themselves.

It is highly desirable that similar provision be made for keepers. In caring for the animals they are brought into contact with the public to a considerable extent, are often called on for information, and at times have to caution and restrain visitors. They should therefore be distinctly recognizable as belonging to the personnel of the park.

BIRD HOUSE

For several years past attention has been called in each successive report to the urgent need of a suitable building in which to exhibit the collection of birds. It is a great satisfaction therefore to note that the appropriation act for the fiscal year ending June 30, 1927, carries an item of $49,000 for beginning the construction of such a building, and authorizes the making of contracts for it to a total cost not exceeding $102,000. This is for the house only, and the cages, interior and exterior, which it is estimated will cost $25,000, are to be provided for in a subsequent appropriation.

A scheme of arrangement for the new building was proposed by the late Mr. Howland Russell, a well known architect, and final plans on which contract may be based at the present writing are being made in the office of Mr. A. L. Harris, the municipal architect of the District of Columbia. The first appropriation is contemplated to permit necessary excavation, and construction of the foundation and walls. It is planned to begin construction in the spring of 1927 so that the entire building may be finished that year with the additional appropriation for its completion estimated in the appropriation bill for this coming year. The completion of such a building will be hailed by all with the greatest satisfaction, for the present structure is antiquated, unfitted for modern needs, and in such bad repair that it is difficult to keep it in proper condition to house exhibits. The new building will give opportunity to form a collection of living birds worthy of a national organization. The interest

of the District Commissioners in its development is greatly appreciated.

RADIO TALKS

The popular appreciation of the Smithsonian series of radio talks having brought a request in March, 1925, for a second course, it was thought that the wide interest taken by the public in the National Zoological Park made that a suitable starting point for a series of nature talks. Accordingly such a series was planned and given under the title "Radio Nature Talks from the National Zoological Park." Thirty-one talks were given between October 3 and May 22, through the cooperation of station WRC. Each opened with a brief statement of current news of the park, usually by the director, who then introduced the speaker of the evening. A 15-minute talk followed on some subject related to the work of the park. The 23 speakers who participated were mainly from the several bureaus of the Smithsonian Institution and the United States Department of Agriculture, but several others also contributed. It is expected that the series will be resumed in September.

The program for the year was as follows:

October 3, 1925: Introduction to the Zoo and to Doctor Mann, by Mr. Austin H. Clark. The nature and purpose of this series of talks, by Dr. William M. Mann.

October 10, 1925: Zoo notes and answers to questions, by Dr. William M. Mann. The Gorilla at Home, by Mr. C. R. Aschmeier, National Museum.

October 17, 1925: Zoo notes and answers to questions, by Dr. William M. Mann. Giant Tortoises, by Miss Doris M. Cochran, National Museum.

October 24, 1925: Behind the cages at the Zoo, by Dr. William M. Mann.

October 31, 1925: What a small boy wants to know about the Zoo; a dialogue between Master Hugh U. Clark of the Cook School and Dr. William M. Mann.

November 7, 1925: Zoo notes, by Dr. William M. Mann. The Musk Ox at Home, by Mr. Edward A. Preble, Biological Survey.

November 14, 1925: Zoo notes, by Mr. Austin H. Clark. Our Autumn Birds, by Mr. Frederick C. Lincoln, Biological Survey.

November 21, 1925: Zoo notes, by Dr. William M. Mann. Howlers and Spider Monkeys, by Maj. Edward A. Goldman, Biological Survey.

November 28, 1925: Zoo notes, by Dr. William M. Mann. The Reptiles of the District of Columbia, by Mr. Maurice K. Brady.

December 5, 1925: Collecting living Animals in South America, by Dr. William M. Mann.

December 12, 1925: Zoo notes, by Dr. William M. Mann. Whales, by Mr. Austin H. Clark, Smithsonian Institution.

December 19, 1925: Zoo notes, by Dr. William M. Mann. Our Winter Birds, by Mr. Clarence R. Shoemaker, National Museum.

December 26, 1925: Parrots at Home, by Dr. Alexander Wetmore, assistant secretary, Smithsonian Institution.

January 9, 1926: Zoo notes, by Dr. William M. Mann. The Natural History of Paradise Key, Fla., by Dr. Thomas E. Snyder, Bureau of Entomology.

January 16, 1926: Zoo notes, by Dr. William M. Mann. The Bears of Okefinokee Swamp, by Dr. Francis Harper, secretary of the Boston Society of

Natural History (read by Mr. Austin H. Clark). This talk was received in exchange through the courtesy of Mr. Thornton W. Burgess and stations WBZ at Springfield and WBZA at Boston, Mass.

January 23, 1926: Zoo notes, by Dr. William M. Mann. Bird Life in Kamchatka, by Mr. Austin H. Clark, Smithsonian Institution.

January 30, 1926: Zoo notes, by Mr. Austin H. Clark. Bird Life in Venezuela. by Mr. Austin H. Clark, Smithsonian Institution.

February 13, 1926: The Origin of the Earth, by Prof. Harlow Shapley, director of the Harvard College Observatory (read by Mr. Edward B. Husing of the staff of station WRC). This talk was given through the courtesy of Professor Shapley and station WEEI, Boston.

February 20, 1926: Zoo notes, by Mr. Austin H. Clark. Experiences in South America, by Dr. Waldo L. Schmitt, National Museum.

February 27, 1926: Announcement of the Smithsonian-Chrysler expedition to Tanganyika Territory, by Dr. William M. Mann. Hunting Bighorns with a Camera, by Dr. Vernon L. Kellogg, secretary, National Research Council.

March 13, 1926: Zoo notes, by Dr. William M. Mann. Winter Butterflies, by Mr. Austin H. Clark, Smithsonian Institution. Farewell address by Dr. Mann.

March 20, 1926: Zoo notes, by Mr. Austin H. Clark. Some Animals of Tanganyika Territory, by Mr. A. Brazier Howell, Biological Survey.

March 27, 1926: Zoo notes, by Mr. Austin H. Clark. The Educational Value of the Zoo, by Dr. Frank W. Ballou, superintendent of public schools, Washington, D. C.

April 10, 1926: Zoo notes, by Mr. Austin H. Clark. Toads, by Dr. Remington Kellogg, Biological Survey.

April 17, 1926: Zoo notes, by Mr. Austin H. Clark. My Trip to Africa for Animals, by Mr. Arthur B. Baker, acting director, National Zoological Park.

April 22, 1926: Reading, by Mr. Austin H. Clark, of a letter from Dr. William M. Mann which was written on board the steamer *Llanstephan Castle* and posted at Marseille.

May 1, 1926: Zoo notes, by Mr. Austin H. Clark. Ferns, by Dr. William R. Maxon, National Museum.

May 8, 1926: Zoo notes. Our giant Moths, by Mr. Austin H. Clark, Smithsonian Institution.

May 15, 1926. Zoo notes, by Mr. Austin H. Clark. The American Bison, by Dr. Edward W. Nelson, Biological Survey.

May 22, 1926: Reading, by Mr. Austin H. Clark, of a letter from Dr. William M. Mann which was written on board the steamer *Llanstephan Castle* and posted at Aden. The Mammals of the District of Columbia, by Dr. Vernon Bailey, Biological Survey.

May 29, 1926: Zoo notes, by Mr. Austin H. Clark. Birds of the Chaco of Argentina, by Dr. Alexander Wetmore, assistant secretary, Smithsonian Institution.

SMITHSONIAN-CHRYSLER AFRICAN EXPEDITION

The absence at the park of certain large and important African animals that are usually considered essential to a zoological collection, was brought by the director to the attention of Mr. Walter P. Chrysler, automobile manufacturer. He became interested and agreed to finance an expedition to Africa to secure some of the animals needed. Tanganyika Territory, in eastern Africa, which seemed to afford the best conditions, was selected as the field of opera-

tions and an expedition was organized and equipped which left New York March 20, in charge of Dr. W. M. Mann, director of the park. Just at the close of the year a report was received of the first operations in the field and the securing of some valuable animals.

Respectfully submitted.

A. B. BAKER,
Acting Director.

DR. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 7

REPORT ON THE ASTROPHYSICAL OBSERVATORY

SIR: The Astrophysical Observatory was conducted under the following passage of the independent offices appropriation act approved March 3, 1925:

> Astrophysical Observatory: For maintenance of the Astrophysical Observatory, under the direction of the Smithsonian Institution, including assistants, purchase of necessary books and periodicals, apparatus, making necessary observations in high altitudes, repairs and alterations of buildings and miscellaneous expenses, $31,180, of which amount not to exceed $26,840 may be expended for personal services in the District of Columbia.

The observatory occupies a number of frame structures within an inclosure of about 16,000 square feet south of the Smithsonian administration building at Washington, and a cement observing station and frame cottage for observers on a plot of 10,000 square feet leased from the Carnegie Solar Observatory on Mount Wilson, Calif. Since October, 1925, the observatory building on Mount Harqua Hala, which we have occupied since 1920, has been closed because the work has been removed to Table Mountain, Calif. By the generosity of Mr. John A. Roebling, a tunnel for instruments, a dwelling for the field director, a shop, and a garage have been constructed at the new site. A dwelling for the assistant is also contemplated within Mr. Roebling's grant.

During the year the Astrophysical Observatory has assumed part of the cost of the maintenance of the observing station at Montezuma, Chile, which was erected in 1920, with means furnished by Mr. Roebling. The constructions there comprise a tunnel for instruments, a dwelling, shop, and garage, and a telephone line 12 miles to Calama.

The present value of the buildings and equipment for the Astrophysical Observatory owned by the Government is estimated at $50,000. This estimate contemplates the cost required to replace the outfit for the purposes of the investigation.

WORK OF THE YEAR

A new station.—The National Geographic Society, having become interested in our efforts to obtain an accurate series of measurements of the variation of solar radiation, made a grant in March, 1925, of

$55,000 to be expended by Dr. C. G. Abbot for the following purposes:

1. To select the best location in the Eastern Hemisphere for a solar-radiation station to cooperate with the two now operated by the Astrophysical Observatory for the measurement of solar variation.

2. To equip the station selected.

3. To send an expedition to be known as the National Geographic Society Solar-Radiation Expedition Cooperating with the Smithsonian Institution to continue solar-radiation observations as long as the grant permits, estimated at four years.

In furtherance of this project, Mr. W. H. Hoover, hitherto director of the Argentine solar-radiation observatory at La Quiaca, and Mr. F. A. Greeley, hitherto assistant at Harqua Hala and at Montezuma, were engaged as director and assistant for the new station. Apparatus was ordered, and Mr. Andrew Kramer, instrument maker to the Astrophysical Observatory, was transferred to construction work under the National Geographic Society's grant. Mr. Aldrich undertook the finer work of constructing galvanometer, pyrheliometer, bolometer, and pyranometer parts, and of standardizing them as well as oversight over the preparations.

Doctor Abbot went abroad to Algeria, Egypt, Baluchistan, and South West Africa to select the location. Preference was given to the Brukkaros Mountain in South West Africa (long. 17° 48′ E., lat. 25° 52′ S.). This is an isolated cup-shaped peak 5,002 feet in elevation, rising precipitously from a level plateau of 3,000 feet elevation. The average yearly rainfall in the vicinity is 3½ inches. A Hottentot reservation surrounds the mountain, and the nearest town is Berseba, 7 miles south, where there are only two white inhabitants, the others Hottentot. Supplies would come from Keetmanshoop, 60 miles distant by auto. Water in small but sufficient quantity is found on Mount Brukkaros.

The construction is undertaken by the public-works department of South West Africa under Mr. A. Dryden, inspector. It is proposed to have a tunnel for instruments, a small dwelling for observers, a shop, a reservoir, and garage. Wire telephones will be installed by the Government of South West Africa and rented to the expedition. Work was begun in April and it was hoped to send the expedition in early autumn.

Though so isolated, the location is in other respects very promising. The average rainfall of only 3½ inches occurs as a rule one-third in February, one-third in March, and the rest scattering. Doctor Abbot was in the vicinity 12 days in March, of which 11 would have been favorable for observing. If this is characteristic of the rainy season, it promises well for the year as a whole. It is also favorable

that the greatest cloudiness comes in the months of February and March, rather than December and January, as is the case in the two American stations. Good months may be expected in Africa when the poorest observing weather occurs in America. The clearness of the sky in that part of South West Africa is extraordinary, and the wind velocity is usually very low.

New station at Table Mountain, Calif.—Actual experience over five years at Mount Harqua Hala, Ariz., has proved less satisfactory than was expected. Although the number of days when it was possible to observe averaged above 70 per cent, there were many months when most of the days were extremely hazy. Especially is this apt to occur in June, July, August, and early September, months when in former years we were accustomed to obtain excellent conditions at Mount Wilson. These unfortunate conditions required the discarding of many observations made at Harqua Hala. Though recently means have been found, as will be explained below, to minimize this disadvantage, yet it was very unfavorable to the morale of the observers to be required to stay in so extremely isolated a spot, and yet to know that the results in some parts of the year were not as good as might have been obtained in very much more agreeable living conditions.

After consulting all available records, and after having special observations made during the autumn, winter, and spring months, it was decided that Table Mountain in California (long. 117° 41′ W., lat. 34° 23′ N., alt. 7,500 feet) would be preferable at all times of the year from the point of view of the sky conditions. Its excellent status for summer was well known already, because it lies only 30 miles away and almost in sight from Mount Wilson, where the summer observations of Messrs. Abbot and Aldrich for many years were reliable guides. As for comfort of the observers, Table Mountain is remarkable, for it lies near a good auto road, only four hours from Los Angeles, and is in a grove of great pine trees, forming part of the Los Angeles County Park. A store and amusement hall are within a mile, and many cottages are still nearer.

Mr. John A. Roebling added to his generous gifts a sufficient sum to defray costs of construction of road, tunnel-shaped observatory, a cottage for director, a second cottage for assistant, a shop, garage, and other accessories. The members of the board of supervisors of Los Angeles County were exceedingly helpful and cordial, especially in their approval of the sole occupancy of a site within the park for the observatory, in constructing an auto road and water service to connect with existing roads and reservoirs at Camp McClellan, and in cooperating with the Smithsonian Institution in erecting a telephone line to connect with the outside world.

Mr. A. F. Moore, field director at Harqua Hala and Table Mountain, designed and superintended all the construction, the removal from Harqua Hala, and the installation at the new site. He, himself, did no small share of the actual labor involved. Since October, 1925, the observations have been going on regularly at Table Mountain. The high quality of the sky conditions has been found to amply justify the removal, and despite an unusually stormy spring in that part of the United States, the number of observing days thus far has kept on a par with the average of five years at Harqua Hala.

From the beginning of the work at the new station, the methods of observing and reduction have been put in the most complete accord with latest experience and with those employed at Montezuma. Furthermore, as it had been found that on very hazy days the brightness of the sky around the sun contributed an amount not negligible to the reading of the pyrheliometers, there were substituted on those instruments new vestibules of four times the former length. In this way the cone of sky, as seen from the sensitive part of the instrument, is cut down from a diameter of 10° to a diameter of 3⅓°. Had this improvement been devised and made in 1920 a good many now worthless observations made at Harqua Hala might have been saved.

Montezuma station.—When, in the year 1924, Mr. Roebling informed the Institution that he felt that his part in developing the solar radiation work should be ended with June 30, 1925, it was necessary to procure other support, or abandon the Chilean observatory. Accordingly, letters were prepared asking the National Academy of Sciences, the Chief of the United States Weather Bureau, and the director of the meteorological office of the Air Ministry of Great Britain whether in their judgment the public value of the observations warranted asking for sufficient increase of the governmental appropriation for the Astrophysical Observatory to carry on the Montezuma station.

President Michelson of the National Academy of Sciences appointed a committee consisting of Dr. W. W. Campbell, chairman, Dr. R. A. Millikan, and Dr. G. N. Lewis, to consider the matter. Their report, which was unanimously adopted by the Academy, follows:

NATIONAL ACADEMY OF SCIENCES,
Washington, D. C., April 30, 1924.

Prof. A. A. MICHELSON,
President National Academy of Sciences,
Washington, D. C.

DEAR SIR: Your committee, charged with the duty of considering the proposed program of the Smithsonian Institution for measuring the heat radiations of the sun, begs to present the following report:

Dr. C. G. Abbot, Director of the Astrophysical Observatory of the Smithsonian Institution, several years ago made the notable discovery that the

intensity of the heat received by the earth from the sun varies in remarkable extent and manner. Through the last two years, beginning with February, 1922, the sun's heat radiations to the earth have been continuously subnormal. The consequences of this deficiency in heat received can not be predicted at this time, but the general subject is undoubtedly one of great importance. We regard it as a national duty and a national opportunity that the observations be continued for a long time to come, and certainly through two complete sunspot cycles of 11 years each.

The principal stations for securing these observations have been located at points noted for their pure skies and their very great number of clear days in the year: At Mount Harqua Hala in Arizona, in the Northern Hemisphere, and at Montezuma in Chile, in the Southern Hemisphere.

The observing station in Chile has been operating successfully since August, 1918, but funds are not in sight to continue its activities beyond July, 1925.

For the reasons briefly stated above, this committee recommends that the National Academy of Sciences advise and request the National Government, through the Director of the Bureau of the Budget and the Appropriation Committees of Congress, to make financial provision for maintaining the Smithsonian Institution's Observatory in Chile without interruption of service.

Respectfully submitted,

GILBERT N. LEWIS,
R. A. MILLIKAN,
W. W. CAMPBELL, *Chairman.*

In transmitting it to the Secretary of the Smithsonian Institution, President Michelson himself wrote:

NATIONAL ACADEMY OF SCIENCES,
June 5, 1924.

MY DEAR MR. SECRETARY: Your communication of April 12, 1924, and that of the assistant secretary of the Institution in regard to funds for the maintenance after July, 1925, of the Chilean observatory under the direction of the Smithsonian Institution were referred to a special committee of the National Academy of Sciences, and I am inclosing, for your information and such use as you may desire to make of it, a copy of the report presented by that committee and approved by the academy.

It will be noted that this report recommends that the National Academy of Sciences "advise and request the National Government, through the Director of the Bureau of the Budget and the Appropriation Committees of Congress, to make financial provision for maintaining the Smithsonian Institution's observatory in Chile without interruption of service." Assuming that the Smithsonian Institution will communicate direct with the Bureau of the Budget, the academy will take no further action unless you find that it can serve you further in the matter.

The value of knowing the variations in heat available from solar radiation to the earth can not be overestimated. I am glad that the academy has been given this opportunity to aid in your efforts to secure funds from Congress for the purpose, and hope that your efforts in this direction will be successful.

Very respectfully yours,

A. A. MICHELSON, *President.*

Hon. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution,
Washington, D. C.

Professor Marvin, Chief of the United States Weather Bureau, *replied:*

UNITED STATES DEPARTMENT OF AGRICULTURE,
OFFICE OF THE CHIEF, WEATHER BUREAU,
Washington, April 28, 1924.

DR. CHARLES G. ABBOT,
Assistant Secretary, Smithsonian Institution,
Washington, D. C.

DEAR DOCTOR ABBOT: Replying to your letter of the 12th instant, I am very glad of the opportunity of expressing my views regarding the desirability of continuing the solar radiation station at Montezuma, Chile, after July, 1925.

When we remember that without the heat and light received from the sun, life on the earth would be impossible, it becomes evident that any facts that can be established relative to the sun, and especially as to the rate at which it radiates heat and light to the earth, are of fundamental importance.

With reference to the work of the Astrophysical Observatory of the Smithsonian Institution, I have already made the following statement in the Monthly Weather Review for March, 1920, page 150:

"The solar radiation investigations conducted by Doctor Abbot constitute a monumental research of the highest possible order and command only the admiration of all. * * * The whole question of short and long period solar variability, and the terrestrial response thereto in terms of weather, is obviously one of great importance to applied meteorology and to science generally. It is very necessary, therefore, that the splendid observational work done by the Astrophysical Observatory be generously supported and extended."

At this point I would like to say emphatically that I consider the systematic and continuous observation of the intensity of solar radiation to be of basic and fundamental importance, and I think it is a mistake to try to justify these observations on the ground that they will enable us to improve the forecasting of the weather from day to day. We do not know as yet what may be the ultimate practical value of the knowledge to be gained by a long series of observations, but the collection of the observations is necessary because the data constitute important facts of a fundamental, scientific character, and are pretty certain ultimately to have important practical applications to the welfare of man. The basic research is fully justified on its own merits, leaving the practical application of the information gained to be developed in the future.

For the determination of the law of the variability of solar radiation continuous observations are required for a long period of years at two or more stations as widely separated as possible. The stations of the Astrophysical Observatory at Montezuma, Chile, and on Mount Harqua Hala, Ariz., seem to be admirably adapted for this observational work, and the observatory staff has the requisite skill and experience to handle the delicate apparatus required and make the necessary complicated reductions. The small sum required to maintain the station at Montezuma, now that it is equipped, will in my opinion be money well invested.

Very truly yours,

C. F. MARVIN, *Chief of Bureau.*

Doctor Simpson, director of the Meteorological Office of the Air Ministry of Great Britain, replied:

METEOROLOGICAL OFFICE, AIR MINISTRY,
ADASTRAL HOUSE, KINGSWAY,
London, W. C. 2, May 14, 1924.

DEAR DOCTOR ABBOT: I have received your letter dated April 12 asking for my opinion regarding the desirability of maintaining the Montezuma solar station after July, 1925.

Surely on this matter there can be no two opinions. The fluctuations in the amount of radiation emitted by the sun, which you and your collaborators have demonstrated, are of such fundamental importance to astronomical, geophysical, and meteorological science that I can not imagine scientific opinion resting satisfied unless arrangements are made for observing and recording these fluctuations. That we are not able at the moment to apply the knowledge gained to clearly demonstrated, practical, and economical purposes does not weigh at all with scientific opinion. If astronomical research is a fit subject for the expenditure of money, the branch of astronomy concerned with the variation of solar radiation can not be allowed to suffer for want of funds. I realize that this view is open to the attack that if the work is of so much importance to the rest of the world why should America be called upon to provide all the funds. My only reply is that, in the existing state of the world, if America does not supply the funds the work will cease. This is a fact and must be recognized as such.

There is still the question as to the necessity for two stations. Past experience affords the best answer to this question. When you first observed the large fluctuations they were so contrary to general expectation that they could not be credited until they had been confirmed by entirely separate observations, taken under largely different climatic conditions. The simultaneous observations at Montezuma and Harqua Hala have demonstrated the reality of the changes.

In the future when other changes are investigated, especially the smaller day to day changes, the same desire for confirmation will be felt if only one station is in operation. I, therefore, think that it will be a great loss to science, to civilization itself, if the Montezuma station is closed before another equally good station is established to check the observations made in Arizona.

Yours sincerely,

G. C. SIMPSON.

Although disallowed by the Bureau of the Budget, the increase was favorably acted upon by the Congress. Hence from and after July 1, 1925, the salaries and part of the other expenses of Montezuma Observatory have been carried on the Astrophysical Observatory appropriation. The costs of maintenance of the solar radiation work as a whole are still supplemented to the extent of about $5,000 per annum from the income of the Hodgkins fund of the endowment of the Smithsonian Institution.

As heretofore the daily solar constant values from Montezuma have been received at Washington by cable. Until December 31, 1925, they were forwarded daily to Mr. H. H. Clayton at Canton, Mass., to promote his studies of the dependence of weather on solar variation. Beginning January 1, 1926, at the request of the Chief of the United States Weather Bureau, the solar constant data have been published upon the daily weather map. Also they have been furnished to Science Service, and, whenever requested, to the telegraph companies in accordance with the following announcement:

Beginning January 1, 1926, the Smithsonian Institution will furnish gratis through the United States Weather Bureau, through either of the telegraph companies, or through the Associated Press, or Science Service, if any or all of these organizations shall request it for the use of their clients, daily or 10-

day mean values of the solar constant of radiation as early and as frequently as results are available from its field stations in Chile and California. In general, results are available about 24 hours after the field observations. The Institution declines, however, to furnish regularly data of this kind to individuals who may request them, since this would be in the nature of discrimination as between citizens, and, besides, too burdensome for the Institution's staff.

Hitherto the values sent out daily have been stated to be "Preliminary." Since October, 1925, they have come from Montezuma alone. Considerable time must yet elapse before the data will have accumulated at Table Mountain sufficiently to permit of the statistical study requisite before daily values can be received from that station. A definitive revision of all work since 1920 is now in progress, and when it is done all values hitherto published, and all those hereafter to be published, will be, it is expected, in their final form.

Washington work—Revision of data.—As already remarked, much of the time of the director, Doctor Abbot, of Mr. Aldrich, and of the instrument maker, Mr. Kramer, was employed in connection with the preparations for the National Geographic Society Solar Radiation Expedition Cooperating with the Smithsonian Institution. This expedition will result in a very great increase of the value of the work of the two existing stations, by confirming or correcting their indications of solar variability.

The remainder of the staff at Washington, comprising Mr. F. E. Fowle and Mrs. Bond, aided lately by Miss Marsden, who is employed at the cost of private funds, have been at work on a complete revision of all Mount Montezuma data. The reasons for this are: (1) That with improved apparatus the basis for the existing "short method" tables had been modified; (2) that various improvements of methods of reduction have been discovered; and (3) that with a longer series of observations now available it is possible both to draw better curves for the "short method," and to more accurately determine the systematic corrections required to eliminate traces of error still remaining, on account of atmospheric haziness and humidity.

For these purposes about 125 days were entirely remeasured and fully rereduced by Langley's fundamental method, used with newly devised precautions for exact results. From the excellent values of atmospheric transmission coefficients resulting, combined with a newly contrived function of atmospheric brightness and humidity, from which all influences of solar variation were removed by introducing for the first time the pyrheliometer reading as a factor, a new basis was laid for the "short method." Among other very valuable improvements the corrections for those regions of the spectrum, not daily observed, which lie in the far ultra-violet and far infra-red were redetermined.

As a result of all this painstaking work, the newly derived solar constant values show in their accordance, as well as in the various internal evidences which their computations afford, that they are of a new and higher order of accuracy than ever reached before.

A new proof of solar variability.—Many writers having expressed doubt as to the certainty of variations of the sun, either of short or long interval, a new and simple proof has been formed by Doctor Abbot, and will be published in the Monthly Weather Review for May, 1926. It rests on the basis that if the atmosphere had uniform temperature, transparency and humidity, and if the sun was observed by means of the pyrheliometer, always at the same altitude above the horizon, then the solar constancy or variation would exhibit itself directly, without recourse to the complex obser-

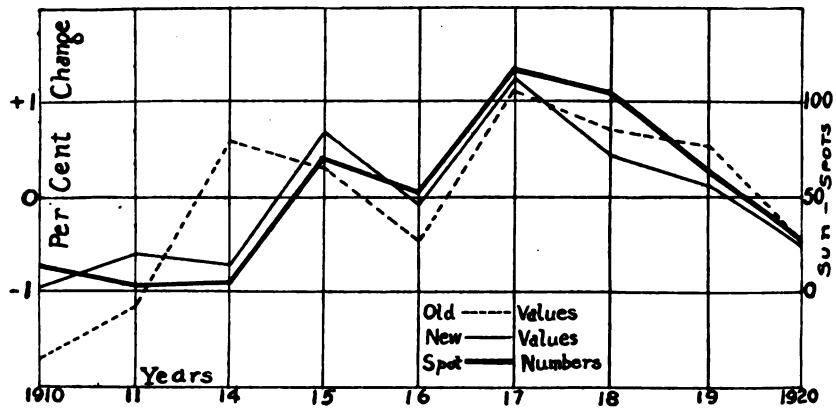


FIG. 1.—Solar variation confirmed by results of selected pyrheliometry.

Mount Wilson data of July, 1910–1920, excluding 1912, 1913, when volcanic dust from Mount Katmai made sky conditions not comparable.
Thin full curve, pyrheliometry of selected days.
Dotted curve, solar constant values hitherto published.
Double curve, sun-spot numbers.

vations and computations associated with the bolometer. In other words, at such times the atmosphere could be regarded as a screen of unchanging influence, and the readings of the pyrheliometer would be directly proportional to the intensity of solar rays.

Testing this new idea on all the observations made in the months of July at Mount Wilson, Calif., between the years 1910 and 1920, Doctor Abbot found it necessary to exclude the years 1912 and 1913 on account of the veiling effect of dust from the volcano, Mount Katmai. Many individual days were excluded also from each July, because the atmospheric conditions differed too much from the usual ones.

From the remaining observations was plotted the full curve of Figure 1. Taking the identical days used in this study, the mean

solar constant values as heretofore published in Volume IV of the Annals give the dotted curve.

Both curves agree very harmoniously except in 1914, when they differ by about 1 per cent. They unite to indicate a range of solar variation in July, 1910, to 1920, of over 2 per cent. Along with them is plotted in a double line the variation of sun-spot numbers. Even in details the agreement is quite remarkable.

From another arrangement of the same data, Doctor Abbot found that those individual days on which the sun's rays appeared to the pyrheliometer more intense (when observed through unchangingly transparent atmospheres), appeared to yield on the average higher solar constant values, as heretofore published. Similarly low days for the pyrheliometer were low for the solar constant. Thus is confirmed by this new test the reality of both long and short interval solar variations. The test is not, however, as satisfactory in the latter as in the former application. As the new method has other valuable applications, it is being used also with all Montezuma and Harqua Hala observations since 1920.

Personnel.—The present personnel of the Astrophysical Observatory is as follows:

Director, Dr. C. G. Abbot.
Research Assistant, Mr. F. E. Fowle.
Research Assistant, Mr. L. B. Aldrich.
Field director, Mr. A. F. Moore.
Field director, Mr. H. B. Freeman.
Assistant, Mr. F. A. Greeley.
Assistant, Mr. E. E. Smith.
Instrument maker, Mr. A. Kramer.
Computer, Mrs. A. M. Bond.

Summary.—In three promising directions the work of the observatory, aimed to secure accurate determinations of solar variability, has been promoted. 1. The National Geographic Society has undertaken to equip and support for several years a cooperating solar radiation station at the best location available in the Eastern Hemisphere. This project is rapidly going forward, and observations may begin at Mount Brukkaros, South West Africa, by October, 1926. 2. By Mr. J. A. Roebling's generosity, the station at Mount Harqua Hala has been removed and reestablished on Table Mountain, Calif., 2,000 feet higher, and much more favorable for observing as well as much less isolated than Mount Harqua Hala. Improved apparatus and methods were introduced there from the beginning of observations, in October, 1925. 3. A complete revision of all Montezuma observations is well advanced. New methods of measurement and reduction are employed identical with those introduced at Table Mountain. The results thus far reached show greatly superior accuracy.

By a new and simple test, the reality of solar variation is confirmed. At the recommendation of the National Academy of Sciences and

of eminent astronomers, physicists, and meteorologists, the Congress has increased its appropriations for the Astrophysical Observatory sufficiently to enable the Smithsonian Institution to continue the two field observatories at Montezuma and Harqua Hala.

Respectfully submitted.

C. G. ABBOT, *Director.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 8

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE

SIR: I have the honor to submit the following report on the operations of the United States Regional Bureau of the International Catalogue of Scientific Literature for the fiscal year ending June 30, 1926.

Attention was called in the last annual report, as well as in a number of those preceding, to the urgent need of a sufficient sum to again set in motion the work of the central bureau of the International Catalogue in order to resume actual publication. As the United States is at present the only nation sufficiently prosperous to aid undertakings of this character it is urgently hoped that an effort be made to obtain a sufficient grant in this country to at least publish the current volumes of the catalogue after which the accumulation on hand from 1914 to date could be published, possibly as a cumulative index.

Briefly, the status of the organization is this: When the work was begun in 1901, authorized by an international conference held in London in which all of the principal countries of the world were represented, no capital fund was available but through the influence and generosity of the Royal Society sufficient credit was established to enable the central bureau to begin publication. Material for the catalogue was furnished by the various countries through regional bureaus without charge, the cost of collecting being borne, then, as now, by each participating country. At first the income from the catalogue did not meet current expenses, but in 1914, just before the beginning of the war, the actual cost of publication and receipts approximately balanced. This was a decidedly encouraging condition, and the many friends of the enterprise looked forward with hope that the near future would show a sufficient income over the cost to repay the Royal Society for funds advanced. All these conditions were changed at the beginning of the war, and when printing was stopped in 1921 the Royal Society had advanced £7,500, in addition to gifts received from the British Government and the Carnegie Corporation of New York, which sum and interest is still owing the society. Should publication be re-

sumed by means of a loan or gift, the large stock of completed sets of the catalogue, now in the hands of the central bureau in London, could be disposed of to new subscribers of the catalogue wishing to complete their records to the date of the beginning of the enterprise, and if these sets were sold for even half of their original price the receipts would be sufficient to repay the amount advanced by the Royal Society. The money needed to resume publication would not be expected to include payment of these obligations, but would be used solely to defray the necessary costs of printing and publishing until subscription receipts were sufficient to pay expenses.

The International Catalogue was never intended to be a commercial enterprise, but rather the means whereby investigators and students might be supplied at cost with data necessary to keep them in touch with scientific progress throughout the world. No private undertaking publishing an index of 10,000 pages annually, in editions of 1,000, could possibly assemble, classify, index, and print approximately 250,000 references, which was the average number contained in each annual issue, and afford to sell the finished work at anywhere near the price charged by the International Catalogue, for the cost of all the clerical and technical labor involved in preparing the original manuscript was borne by the regional bureaus as their contribution to the need of scientific bibliography.

Material for the catalogue is collected by the various regional bureaus supported in every case by the countries they represent, this support being mainly derived through governmental grants. The work of editing and publishing the material furnished by the various regional bureaus was intrusted to a Central Bureau in London whose support was derived from the sale of the catalogue to subscribers. The subscription price was $85.00 for each annual issue containing about 10,000 pages assembled in 17 volumes varying in size to meet the requirements of the several sciences.

The cost of printing and publishing alone has to be met through funds derived from the sales of the catalogue. This cost was, in 1914, approximately $35,000 which in 1922 was estimated, on account of war conditions, to have increased to more than twice this sum.

However, based on the offer of a large and reliable commercial printing house in the United States it is estimated that the cost would be no greater now than it was in 1914, provided not less than 10,000 pages per year were printed and the work were distributed evenly throughout the year. Assuming this estimate to be approximately correct it is believed that with a capital fund sufficient to pay for two annual issues the catalogue would again become self-supporting, for the current income, even if less than half the edition

were sold, would be sufficient to pay the running expenses of the central bureau together with a large part of the printing cost and two years would be sufficient time to advertise and establish the enterprise on a permanent financial basis.

Respectfully submitted.

LEONARD C. GUNNELL,
Assistant in Charge.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 9

REPORT ON THE LIBRARY

SIR: I have the honor to submit the following report on the activities of the library of the Smithsonian Institution for the fiscal year ended June 30, 1926.

FRANCIS HENRY PARSONS

Mention should be made at the outset of the death on July 25, 1925, of Mr. Francis Henry Parsons, who had retired a few months before from the position of assistant in charge of the Smithsonian division of the Library of Congress, after 25 years of service. (A brief sketch of Mr. Parsons' career is given under the heading Necrology on page 32 of this report.)

CHANGES IN STAFF

There were a number of changes in the library staff during the year. The most important was the appointment of Miss Isabel L. Towner to the position, newly classified by the Personnel Board, of assistant librarian in the National Museum, to fill the vacancy caused by the retirement, and subsequent death, of Mr. Newton P. Scudder. Miss Towner was appointed from the civil service list after reinstatement by Executive order. Her training and experience fit her well for the duties of the position, for she is a graduate of Goucher College and of the New York State Library School, and has spent nearly 20 years in practical library work, chiefly in Government and scientific libraries.

Miss Sarah Young, junior librarian, resigned in October, and was succeeded by Mr. R. Webb Noyes, a graduate of Bowdoin College and for some time a student at the New York State Library School. His experience was gained chiefly in university and State libraries, especially the New York State Library, where he collaborated with Miss J. Dorcas Fellows in preparing the twelfth edition of the Decimal Classification, by Melvil Dewey.

Miss Minnie Murrill, who for several years had been a cataloguer in the Museum, resigned to accept a position in the library of the University of Alabama. Her position was filled temporarily, and will be filled permanently as soon as the person chosen becomes available.

Miss Agnes Auth was promoted, at the close of the year, to the position of minor library assistant, one of the two new positions that were granted to the library by Congress as of July 1, 1926.

Miss Auth's former position as messenger was reclassified to that of library aid, and was filled by the appointment of Mrs. Mary Arnold Baer.

The vacancy in the position of assistant messenger, occasioned by the appointment of Mr. John Anderson to a position elsewhere in the Institution, was filled by the transfer of Mr. William Helvestine from another Government department.

At different times during the year various persons were employed temporarily. Among these were Miss Ellen D. McBryde, Miss Mary Martin, Mrs. Victoria B. Turner, Mrs. M. Landon Reed, Mrs. Madaline Amphlett, Miss Helen Turnbull, Mr. William P. Wright, Mr. Clarence Gunther, Mr. Walter Jaeger, and Mr. Carl Haardt.

EXCHANGE OF PUBLICATIONS

As is well known, the growth of the Smithsonian Library is due almost entirely to the exchange of publications between the Institution and its branches and other learned institutions and societies throughout the world. These publications come to the library direct, or through the International Exchange Service, which is administered by the Institution. During the past year 30,541 packages, of one or more publications each, came to the library by mail, and 7,352 through the exchange. The number of the latter was more than three times that of the year before. The special effort to complete broken sets, by listing wants and writing follow-up letters, which was begun the previous year, was continued with vigor. Exchange relations were opened with many new societies. Most of the 1,225 letters written by the library had to do with the exchange of publications.

MAIN LIBRARY

The publications sent to the Smithsonian deposit, which is the main library of the Institution, numbered 5,088, comprising 3,649 complete volumes, 843 parts of volumes, 175 pamphlets, and 421 charts. Documents of foreign governments, more or less statistical in character, to the number of 7,305, were also sent, without being stamped or entered, to the Document Division of the Library of Congress.

Many dissertations were received from the universities of Basel, Berlin, Bern, Breslau, Cornell, Erlangen, Giessen, Greifswald, Halle, Heidelberg, Johns Hopkins, Kiel, Königsberg, Liège, Louvain, Lund, Neuchâtel, Pennsylvania, Strassbourg, Utrecht, Vene-

zuela, Warsaw, and Zürich; and from technical schools at Berlin, Charlottenburg, Geneva, Karlsruhe, and Zürich. Fewer dissertations than usual came from Germany, Austria, and Switzerland. Instead, the library received from the universities in those countries hundreds of abstracts, each giving merely the author's name, the subject of the paper, and a brief summary of its contents.

OFFICE LIBRARY

The office library, which consists chiefly of some of the more frequently used society publications, the aeronautical collection, the art-room collection, the employees' library, and various books, mainly of a reference nature, in the administrative offices, was increased during the year by 243 volumes, 1 part of a volume, and 18 pamphlets. Of these, 54 were added to the aeronautical collection. It may be stated in passing that this collection, owing to its rapidly growing importance, will soon be raised to the dignity of a division—the tenth by number—of the Smithsonian library and named the Langley Aeronautical Library in memory of the third secretary of the Institution, whose researches and experiments marked the successful beginning of aeronautics in the United States.

Many important books were received during the year, but the outstanding one was probably the North American Indian, volume 13, by Edward S. Curtis, presented by Mrs. E. H. Harriman. This was deposited with others of the series in the library of the Bureau of American Ethnology.

The circulation, which showed a considerable gain over the previous year, was 2,618. Of this number, 2,183 were magazines. A corresponding increase was apparent in the number of books and periodicals consulted in the reference room, those most in demand being the aeronautical collection and the transactions of the learned societies.

It is gratifying to report that, after a lapse of nine years, binding was resumed for the office library. Of the 172 volumes bound, 41 belonged to the exhibition set of Smithsonian publications.

The work done in connection with the general catalogue of the Smithsonian Library, which is kept in the office reading room, was as follows:

Volumes catalogued	3,495
Volumes recatalogued	134
Charts catalogued	403
Cards typed	1,525
Library of Congress cards filed	688
New authors added	348

MUSEUM LIBRARY

During the year the library of the National Museum was increased by 1,660 volumes and 1,466 pamphlets, making a total of 66,808 volumes and 104,417 pamphlets. Most of the accessions were, of course, obtained by exchange, but some were obtained by purchase and an unusually large number by gift. The largest gift was from the Library of Congress. This comprised 606 volumes and 808 parts of volumes from its collection of duplicates—some stamped Smithsonian Deposit, others Library of Congress—and was sent to the Museum library to help complete its sets of society publications pertaining mainly to natural history. Generous gifts were also received from Secretary Walcott, who, as usual, contributed hundreds of items to the library, particularly to the section of geology and paleontology; Dr. W. H. Holmes, who gave 83 volumes and 363 pamphlets to the general collection; Dr. W. H. Dall, who added 173 titles to the section of mollusks; Dr. C. W. Richmond and Mr. J. H. Riley, who gave many books and pamphlets, some of them very rare, to the main collection, as well as to the section of birds and other sections; and Mr. N. M. Judd, who contributed 18 volumes to the section of American archeology. Among other donors were Assistant Secretary Wetmore, Mr. A. N. Caudell, Mr. John Gallagher, Dr. O. P. Hay, Dr. A. Hrdlička, Dr. W. R. Maxon, Dr. G. S. Miller, Mr. S. A. Rohwer, and Dr. W. Schaus.

The number of sectional libraries in the Museum is now 37. These, while in a measure independent working units, are in a real sense very important parts of the general library. During the year the study of their resources and problems that was begun the year before was continued, with a view to strengthening their collections and making them more available. The sectional libraries are as follows:

Administration.
Administrative assistant's office.
American Archeology.
Anthropology.
Biology.
Birds.
Botany.
Echinoderms.
Editor's office.
Ethnology.
Fishes.
Foods.
Geology.
Graphic Arts.
History.
Insects.
Invertebrate Paleontology.
Mammals.
Marine Invertebrates.
Mechanical Technology.
Medicine.
Minerals.
Mineral Technology.
Mollusks.
National Gallery of Art.
Old World Archeology.
Organic Chemistry.
Paleobotany.
Photography.
Physical Anthropology.
Property clerk's office.
Reptiles and Batrachians.
Superintendent's office.
Taxidermy.
Textiles.
Vertebrate Paleontology.
Wood Technology.

TECHNOLOGICAL LIBRARY

The technological library, located in the Old Museum Building, consists chiefly of material having to do with the arts and industries, together with certain classes of the natural history collection that are little called for, or for which there is not room in the new building. During the year, in addition to keeping up the current work, the assistant in charge, with the help of those who from time to time took his place, continued the reorganization that was begun the year before. About 1,500 cards were added to the shelf list. The loans were 245. It is hoped that the work of reorganizing this library can be finished in the course of the next fiscal year.

ASTROPHYSICAL OBSERVATORY LIBRARY

The library of the Astrophysical Observatory was increased by 105 volumes, 17 parts of volumes, 36 pamphlets, and 4 charts. The number of volumes bound was 124. The loans are included with those of the office library.

A beginning was made in checking up the various series of astrophysical periodicals and supplying the missing numbers. This work will soon be completed. The shelf list will also be finished and an inventory taken.

BUREAU OF AMERICAN ETHNOLOGY LIBRARY

The activities of the library of the Bureau of American Ethnology are described in the report of the chief of that bureau, by whom the library is administered.

NATIONAL GALLERY OF ART LIBRARY

Although the library of the National Gallery of Art is administered as a sectional library of the National Museum and will probably continue to be as long as the National Gallery is housed in the Natural History Building, it is usually thought of as one of the nine divisions of the Smithsonian Library. As such it is given a place by itself in the annual report. Its accessions during the year were 155 volumes, 479 parts of volumes, and 130 pamphlets. It now totals 581 volumes and 665 pamphlets, a small but carefully chosen and valuable nucleus for the larger library soon to be collected.

FREER GALLERY OF ART LIBRARY

The library of the Freer Gallery of Art is restricted to the interests represented by the collections of art objects pertaining to the arts and cultures of the Far East, India, and Persia and the nearer

East; by the life and works of James McNeil Whistler and of certain other American painters whose pictures are owned by the gallery; and, further, to a very limited degree, by the Biblical manuscripts of the fourth and fifth centuries, which, as the possession of the Freer Gallery, are known as the Washington manuscripts.

During the year, 735 persons visited the library, of whom more than 100, including a number of college teachers and students, came for the purpose of serious study, many being especially interested in the facsimiles of the Biblical manuscripts. The library was increased by 500 volumes, of which 462 are in the Chinese and Japanese languages, and by 72 parts of volumes and 142 pamphlets.

NATIONAL ZOOLOGICAL PARK LIBRARY

While this library is still quite small, numbering about 1,500 volumes and pamphlets, it has been so carefully selected that it represents a very valuable working collection. It increased the past year by only 9 volumes, but two of these were volumes 3 and 4 of the monumental work, A Natural History of the Ducks, by John C. Phillips. Five volumes were bound.

SUMMARY OF ACCESSIONS

The accessions for the year, with the exception of those to the library of the Bureau of American Ethnology, may be summarized as follows:

Library	Volumes	Other publications	Total
Astrophysical Observatory	105	57	162
Freer Gallery of Art	500	214	714
National Gallery of Art	155	609	764
National Zoological Park	9		9
Smithsonian deposit, Library of Congress	3,649	1,439	5,088
Smithsonian office	243	19	262
United States National Museum, including the technological library	1,660	1,466	3,126
Total	6,321	3,804	10,125

An estimate of the number of volumes, pamphlets, and charts in the Smithsonian library, including the Smithsonian deposit in the Library of Congress, on June 30, 1926, was as follows:

Volumes	514,071
Pamphlets	139,525
Charts	23,887
Total	677,483

This number does not include the many thousands of parts of volumes in the library awaiting completion of the volumes.

SPECIAL ACTIVITIES

The regular staff, with the aid of a number of trained temporary employees, undertook many special tasks that required attention as a condition to carrying out further plans for reorganization and development.

The sorting of the large accumulations of miscellaneous material in the Museum library, begun the previous year, was practically completed.

In the Museum library, too, the sets of society publications were checked up and missing numbers listed. Many of these were supplied from the duplicates in the Library of Congress, as has been said in an earlier part of this report. It is hoped that most of the others can be obtained by exchange, either from the societies themselves, or from other libraries. To this end, toward the close of the year hundreds of want-letters were written; and many duplicates were taken out and transferred to the west stacks of the Smithsonian Building, where they were added to those from other divisions of the library and put in order. Later they will be listed and disposed of by exchange or by gift. This work of checking up and supplying numbers lacking in the various series in the library will continue to receive special attention from the staff.

It should be mentioned in this connection that the six sets of the publications of the Institution and its branches that are kept in the Smithsonian library were found upon examination to have many gaps. These it was still possible, in the main, to fill, so that the sets are now nearly complete.

The shelves of the main collection in the Museum library were arranged, a task that occupied months, as they had not been arranged for a long time and were in a very confused state. This was preliminary to taking an inventory of the library, which will be begun as soon as the shelf list, on which much progress was made during the year, is finished.

There was an intensive effort to bring the filing of the Concilium Bibliographicum cards up to date, with the result that the whole of the alphabetic set and part of the methodical set were filed. In all, 16,906 cards were filed. This work involved the rearrangement of the cards already in the cases. Many cards remain unfiled, but the outlook is hopeful, and the current cards are being filed as they come in. The two sets referred to are the only ones now being received, as the systematic set was discontinued toward the close of the year.

Another activity that required no little time was the preparation of 1,793 volumes for binding, of which 1,497 were for the Museum, 172 for the office, and 124 for the Astrophysical Observatory. This was more than double the number bound in any year during the

previous six years, and almost as many as were bound altogether during the previous five years. When these volumes return to the shelves they will greatly improve the appearance and increase the usefulness of the library.

Preliminary steps were taken toward modernizing and expanding the catalogue, a work that during the coming year will be especially emphasized, for one of the chief needs of the library now is a dictionary catalogue, both of the main collections and of the sectional libraries.

Mention might be made, too, of the fact that the exhibition set of Smithsonian publications was packed and sent, together with the corresponding sets of the publications of the National Museum and the Bureau of American Ethnology, to Philadelphia, for exhibition at the Sesqui Centennial. These sets, with the International Catalogue of Scientific Literature, comprise nearly 900 volumes.

INTERLIBRARY LENDING

The library of the Smithsonian Institution is primarily for the use of those employed in the Institution and its branches, and of others who come to it from outside for the purpose of research, but it extends the privilege of borrowing from its collections to all libraries. For many years this privilege has been taken advantage of increasingly.

No restrictions are placed on the loans, except that the librarian who borrows the material is expected to take the usual care of it and return it in a reasonable time. He also, of course, pays express charges both ways, for it is customary to send material and have it returned either by messenger, as in the case of Washington libraries, or by express.

Some books, especially duplicates, are occasionally sent out on semipermanent charge, to be used as an aid in special research, and to be kept as long as needed, or until called for. Rare and valuable books are seldom lent, but they may always be consulted at the library. Photostat copies of parts of them may also be made if desired.

The library not only lends material; it borrows it, too, and that almost daily. Some of this, especially from the Library of Congress, is sent to the library on semipermanent deposit, and constitutes a very important addition to its regular working collections.

The libraries with which the Smithsonian library carries on most regularly this exchange of material are, besides the Library of Congress, those of the Department of Agriculture, the Geological Survey, the Hygienic Laboratory, the Army Medical Museum, the Coast and Geodetic Survey, the Bureau of Fisheries, the Weather

Bureau, the Bureau of Mines, the Air Service, the National Research Council, the National Advisory Committee for Aeronautics, and the principal learned societies, colleges, universities, museums, and art galleries of the East and Middle West. It also lends to public libraries, and sometimes borrows from them.

Respectfully submitted.

WILLIAM L. CORBIN,
Librarian.

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

APPENDIX 10

REPORT ON THE PUBLICATIONS

SIR: I have the honor to submit the following report on the publications of the Smithsonian Institution and the Government bureaus under its administrative charge during the year ending June 30, 1926:

The Institution proper published during the year 8 papers in the series of Smithsonian Miscellaneous Collections, 1 annual report, and pamphlet copies of the 22 articles contained in the report appendix, and 1 special publication. The Bureau of American Ethnology published 1 annual report. The United States National Museum issued 1 annual report, 2 volumes of proceedings, 3 complete bulletins, 1 part of a bulletin, and 3 parts of 2 volumes in the series of Contributions from the United States National Herbarium, and 45 separates from the proceedings. The National Gallery of Art issued Catalogue of Collections, II.

Of these publications there were distributed during the year 168,932 copies, which included 147 volumes and separates of the Smithsonian Contributions to Knowledge, 20,222 volumes and separates of the Smithsonian Miscellaneous Collections, 35,671 volumes and separates of the Smithsonian annual reports, 1,945 Smithsonian special publications, 96,804 volumes and separates of the various series of National Museum publications, 12,993 publications of the Bureau of American Ethnology, 251 publications of the National Gallery of Art, 68 volumes of the Annals of the Astrophysical Observatory, 48 reports of the Harriman Alaska Expedition, 738 reports of the American Historical Association, and 65 publications presented to but not issued directly by the Smithsonian Institution or its branches.

SMITHSONIAN MISCELLANEOUS COLLECTIONS

Of the Smithsonian Miscellaneous Collections, volume 73, 1 paper was issued; volume 77, 5 papers; volume 78, 2 papers; in all, 8 papers as follows:

VOLUME 78

No. 3. Opinions Rendered by the International Commission on Zoological Nomenclature. December 16, 1925. 40 pp. (Publ. 2830.)

VOLUME 77

No. 4. An Introduction to the Morphology and Classification of the Foraminifera. By Joseph A. Cushman. July 21, 1925. 77 pp., 16 pls., 11 text figs. (Publ. 2824.)

No. 8. The Morphology of Insect Sense Organs and the Sensory Nervous System. By R. E. Snodgrass. February 16, 1926. 80 pp., 32 text figs. (Publ. 2831.)

No. 9. Fossil Footprints from the Grand Canyon. By Charles W. Gilmore. January 30, 1926. 41 pp., 12 pls., 23 text figs. (Publ. 2832.)

No. 10. An Archeological Collection from Young's Canyon, near Flagstaff, Ariz. By J. Walter Fewkes. January 12, 1926. 15 pp., 9 pls., 3 text figs. (Publ. 2833.)

No. 11. Music of the Tule Indians of Panama. By Frances Densmore. April 16, 1926. 39 pp., 5 pls. (Publ. 2864.)

VOLUME 78

No. 1. Explorations and Field Work of the Smithsonian Institution in 1925. April 8, 1926. 132 pp., 128 text figs. (Publ. 2865.)

No. 2. Mexican Mosses Collected by Brother Arsène Brouard. By I. Thériot. June 15, 1926. 29 pp., 14 text figs. (Publ. 2867.)

SMITHSONIAN ANNUAL REPORTS

Report for 1924.—The complete volume of the Annual Report of the Board of Regents for 1924 was received from the Public Printer November 12, 1925.

Annual Report of the Board of Regents of the Smithsonian Institution, showing operations, expenditures, and condition of the Institution for the year ending June 30, 1924. xii+535 pp., 103 pls., 43 text figs. (Publ. 2795.)

The appendix contained the following papers:

The origin of the solar system, by J. H. Jeans.
The electrical structure of matter, by Prof. Sir Ernest Rutherford.
The physicist's present conception of an atom, by R. S. Millikan.
The vacuum—there's something in it, by W. R. Whitney.
The use of radium in medicine, by Antoine Béclère.
Clear fused quartz made in the electric furnace, by Edward R. Berry.
The drifting of the continents, by Pierre Termier.
The probable solution of the climatic problem in geology, by William Ramsay.
A modern menagerie; more about the National Zoological Park, by N. Hollister.
Nests and nesting habits of the American eagle, by Francis H. Herrick.
The breeding places of the eel, by Johs. Schmidt.
Cankerworms, by R. E. Snodgrass.
A botanical trip to Ecuador, Peru, and Bolivia, by A. S. Hitchcock.
Orchid collecting in Central America, by Paul C. Standley.
Sketches from the notebook of a naturalist-traveler in Oceania during the year 1923, by Casey A. Wood.
Historical tradition and oriental research, by James Henry Breasted.
Shamanism of the natives of Siberia, by I. M. Casanowicz.
Egypt as a field for anthropological research, by Prof. P. E. Newberry.
North American Indian dwellings, by T. T. Waterman.
The nature of language, by R. L. Jones.
John Mix Stanley, artist-explorer, by David I. Bushnell.
Herluf Winge, by Th. Mortensen.

Report for 1925.—The report of the executive committee and proceedings of the Board of Regents of the Institution, and the report

of the secretary, both forming parts of the annual report of the Board of Regents to Congress, were issued in pamphlet form in December, 1925.

Report of the executive committee and proceedings of the Board of Regents of the Smithsonian Institution for the year ending June 30, 1925. 11 pp. (Publ. 2835.)

Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1925. 122 pp. (Publ. 2834.)

The general appendix to this report, which was in press at the close of the year, contains the following papers:

The spiral nebulæ and the structure of space, by Carl Wirtz.
Immensities of time and space, by A. Vibert Douglas.
Certain aspects of high-pressure research, by P. W. Bridgman.
Lightning and other high-voltage phenomena, by F. W. Peek, jr.
Chemical elements and atoms, by G. Urbain.
The manufacture of radium, by Camille Matignon.
The chemistry of solids, by Cecil H. Desch.
Terrestrial magnetism in the twentieth century, by Daniel L. Hazard.
Some causes of volcanic activity, by Arthur L. Day.
Geology in the service of man, by W. W. Watts.
The yeasts: A chapter in microscopical science, by A. Chaston Chapman.
Tropical cyclones and the dispersal of life from island to island in the Pacific, by Stephen Sargent Visher.
Isolation with segregation as a factor in organic evolution, by David Starr Jordan.
The biological action of light, by Leonard Hill.
Animal life at high altitudes, by Maj. R. W. G. Hingston.
The nest of the Indian tailor bird, by Casey A. Wood.
The needs of the world as to entomology, by L. O. Howard.
From an egg to an insect, by R. E. Snodgrass.
The rôle of vertebrates in the control of insect pests, by W. L. McAtee.
Carnivorous butterflies, by Austin H. Clark.
The potato of romance and reality, by W. E. Safford.
The relation of geography to timber supply, by W. B. Greeley.
The historical geography of early Japan, by Carl Whiting Bishop.
The excavations of the sanctuary of Tanit at Carthage, by Byron Khun de Prorok.
The Smithsonian Institution.
Sir Archibald Geikie, by Sir Aubrey Strahan.
Ned Hollister (1876–1924), by Wilfred H. Osgood.

SPECIAL PUBLICATION

North American Wild Flowers. Vol. 1. By Mary Vaux Walcott. 1926. Quarto, portfolio binding, 80 plates in color, 1 page descriptive text for each. (Not for general distribution; issued through subscriptions.)

PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM

The publications of the National Museum are: (*a*) The annual report, (*b*) the Proceedings of the United States National Museum, and (*c*) the Bulletin of the United States National Museum, which

includes the contributions from the United States National Herbarium. The editorship of these publications is vested in Dr. Marcus Benjamin.

During the year ending June 30, 1926, the Museum published 1 annual report, 2 volumes of proceedings, 3 complete bulletins, 1 part of a bulletin, 2 complete volumes and 3 parts of 2 volumes in the series Contributions from the United States National Herbarium, and 45 separates from the proceedings.

The issues of the bulletin were as follows:

Bulletin 100. Contributions to the Biology of the Philippine Archipelago and Adjacent Regions. Volume 2, part 4. Silicious and Horny Sponges collected by the United States Fisheries steamer *Albatross* during the Philippine expedition, 1907–1910. By H. V. Wilson.

Bulletin 131. The Minerals of Idaho. By Earl V. Shannon.

Bulletin 132. Revision of the North American Moths of the Subfamilies Lasperesiinae and Olethreutinae. By Carl Heinrich.

Bulletin 133. Observations on the Birds of Argentina, Paraguay, Uruguay, and Chile. By Alexander Wetmore.

Of the separate papers of the Contributions from the United States National Herbarium the following were issued:

Volume 22, part 9. Studies in American Phaseolineae. By C. V. Piper.

Volume 24, part 6. A Bibliographic Study of Beauvois' Agrostographie. By Cornelia D. Niles. With introduction and botanical notes, by Agnes Chase.

Volume 24, part 7. The North American Species of Stipa. Synopsis of the South American Species of Stipa. By A. S. Hitchcock.

Of the separates from the proceedings, 4 were from volume 66, 13 from volume 67, 25 from volume 68, and 3 from volume 69.

PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY

The editorial work of the bureau has continued under the direction of the editor, Mr. Stanley Searles.

During the year one annual report was issued.

Fortieth Annual Report. Accompanying papers: The Mythical Origin of the White Buffalo Dance of the Fox Indians; The Autobiography of a Fox Indian Woman; Notes on Fox Mortuary Customs and Beliefs; Notes on the Fox Society Known as "Those Who Worship the Little Spotted Buffalo"; The Traditional Origin of the Fox Society Known as "The Singing Around Rite," by Truman Michelson. 664 pp., 1 pl., 1 fig.

Publications in press or in preparation are as follows:

Forty-first Annual Report. Accompanying papers: Coiled Basketry in British Columbia and Surrounding Region (Boas, assisted by Haeberlin, Roberts, and Teit); Two Prehistoric Villages in Middle Tennessee (Myer).

Forty-second Annual Report. Accompanying papers: Social Organization and Social Usages of the Indians of the Creek Confederacy; Religious Beliefs and Medical Practices of the Creek Indians; The Culture of the Southeast (Swanton); Indian Trails of the Southeast (Myer).

Bulletin 82. Archeological Observations North of the Rio Colorado (Judd).
Bulletin 83. Burials of the Algonquian, Siouan, and Caddoan Tribes West of the Mississippi (Bushnell).
Bulletin 84. The Language of the Kiowa Indians (Harrington).

REPORT OF THE AMERICAN HISTORICAL ASSOCIATION

The annual reports of the American Historical Association are transmitted by the association to the Secretary of the Smithsonian Institution and are communicated by him to Congress as provided by the act of incorporation of the association.

The annual report for 1920 and the supplemental volume to the report for 1922 were issued during the year. The annual reports for 1921 and 1922, and the supplemental volume to the report for 1923 were in press at the close of the year.

REPORT OF THE NATIONAL SOCIETY, DAUGHTERS OF THE AMERICAN REVOLUTION

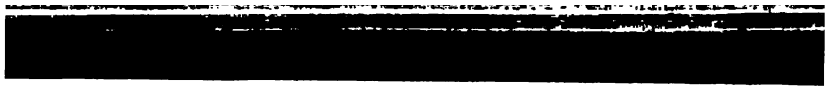
The manuscript of the Twenty-eighth Annual Report of the National Society, Daughters of the American Revolution, was transmitted to Congress, in accordance with the law, on December 15, 1925.

SMITHSONIAN ADVISORY COMMITTEE ON PRINTING AND PUBLICATION

The editor has continued to serve as secretary of the Smithsonian advisory committee on printing and publication, to which are referred for consideration and recommendation all manuscripts offered to the Institution and its branches. Seven meetings were held during the year and 96 manuscripts acted upon.

Respectfully submitted.

W. P. TRUE, *Editor.*

Dr. CHARLES D. WALCOTT,
Secretary, Smithsonian Institution.

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